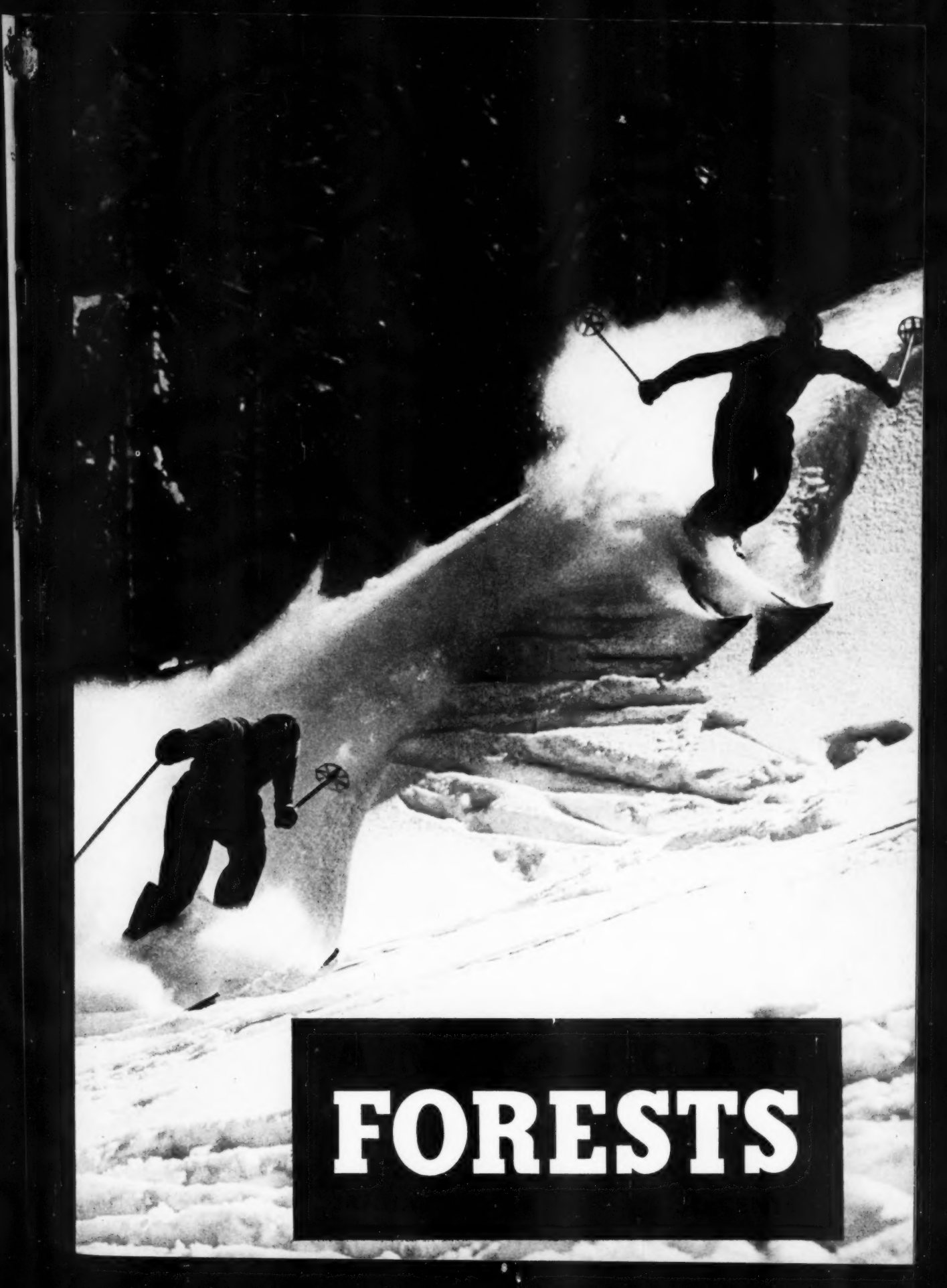

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AMERICAN FORESTS

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Editor-in-Chief

ERLE KAUFFMAN
Editor

JAMES B. CRAIG
Assistant Editor

ALBERT G. HALL
Associate Editor

FRED E. HORNADAY
Advertising Director

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Photograph by Department of the Interior

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TALK OF THE WOODS

Man's new-found ability to make rain—and how they could have used it on the October forest fires in Maine—has struck a legal snag, according to *Chemical and Engineering News*. The trouble, it seems, is that you can't tamper with the weather without running afoul of the law—the lawmakers being rather realistic about weather as an "act of God."

So the artificial rainmakers are busy these days with their lawyers. General Electric, conducting weather control experiments for the Army, already has been threatened with damage suits by citizens who blame them for adverse weather. The Army would solve the problem by classifying all weather experiment information as "secret." General Electric, with the argument that scientific weather control may have greater implications than atomic energy, believes Congress should legislate on the subject.

Pity the poor Congressmen who have to thrash this one out.

****

Wanted — definition of the word "recreation." Topflight recreation experts batted this back and forth without a decision at the December meeting of the Federal Inter-Agency Committee on Recreation. Submit all entries to George E. Dickie, executive secretary of the committee, Interior Building, Washington, D. C.

****

The question of the moment—when will the Secretary of Agriculture reply—if he does reply—to the October letter of Representative Frank A. Barrett's subcommittee of the House Public Lands Committee? This letter, it will be recalled (see AMERICAN FORESTS for November), set forth the committee's conclusions after a series of hearings in the West and recommended, among other things, what some conservationists have labeled "three more years of overgrazing" on the national forests. The Secretary, of course, can pull rank on the committee and ignore the letter. But opinion around Washington is that he won't.

****

To point with pride—AFA director-elect George W. Merck of Rahway, New Jersey, president of Merck & Company, manufacturing chemists, has been awarded the eighth biennial Award for Chemical Achievement. His contribution to the nation's health—pioneering in large-scale production of the "wonder drug" streptomycin.

****

Heard at Secretary of the Interior Krug's recent two-day conference with conservation organizations:

"The Missouri River Basin project would flood 55,000 acres of good farm land in order to drain 60,000 acres of the finest nesting grounds for geese and ducks."

"The dam builders solicit public support by emphasizing recreational paradises resulting from water impoundment. Where are they?"

"Now they want to sell 'surplus' military land to the conservation bureaus. Considering that the taxpayers paid for the lands in the first place, why make them pay twice? Why not just transfer them?"

Looks like we need some coordination at the top.

****

This slogan — "Keep California's Forests Ever Green"—won for thirteen-year-old Barbara Girouard of Nevada County, a flight in a forest fire patrol plane and a commission as "Honorary Airplane Fire Observer."

We need a lot more Barbaras.

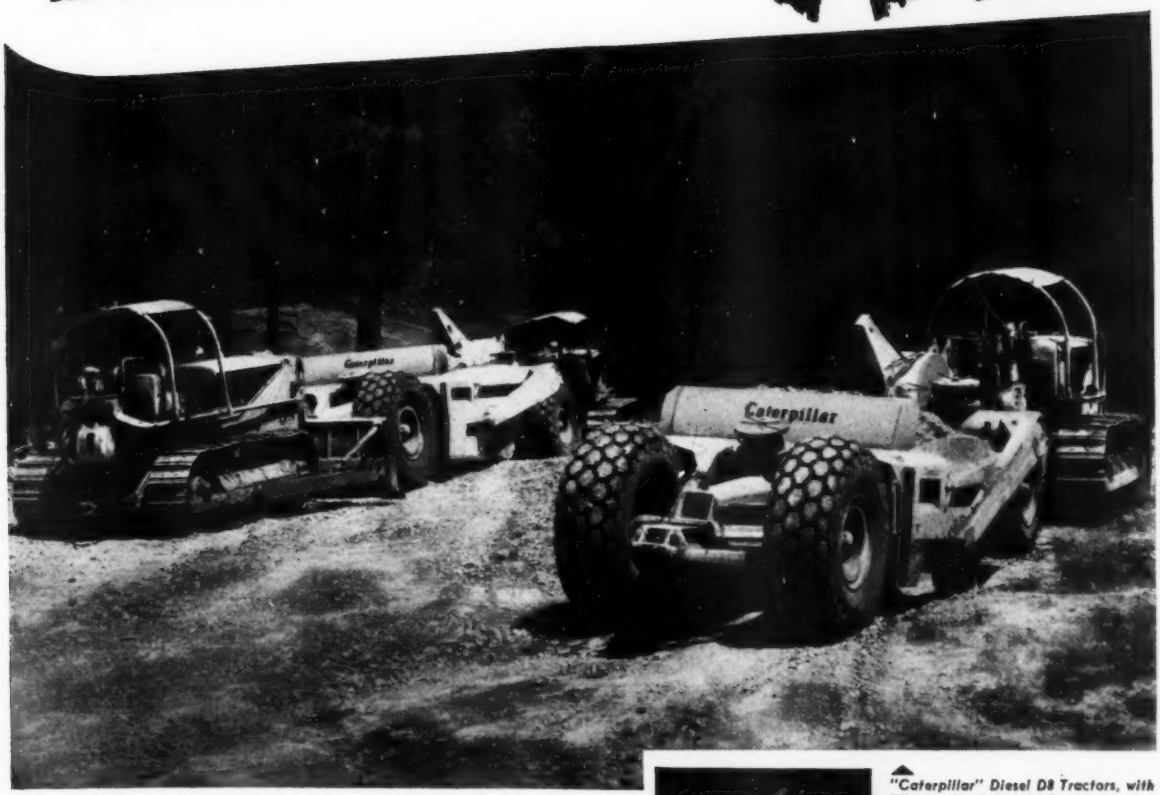
****

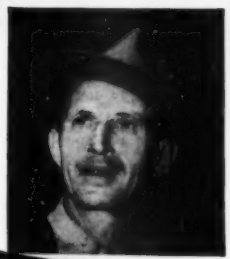
Collector's note—a Wood Collector's Society has been formed to enable hobbyists to "assist each other in the collection of wood samples from all over the world" and to "cooperate with institutions in augmenting their collections of herbariums and wood specimens." So if you have access to uncommon or unusual woods—or would like to turn wood collector yourself—write the society's president, W. F. Opdyke, 14668 Superior Road, Cleveland Heights, Ohio.

****

When W. L. McAtee retired from the Fish and Wildlife Service recently after forty-four years of distinguished service in the field of wildlife conservation, he left on the books a unique record. As editor of *Wildlife Review*, he prepared, in fifty-one issues, abstracts of 6,053 articles, papers, books, bulletins and other wildlife management material.

AT KINZUA IT'S "CATERPILLAR" FROM A TO Z





"Caterpillar" Diesel D8 Tractors, with "Caterpillar" No. 80 Scrapers and a No. 8S Bulldozer, build haul-roads on the Kinzua operation.

Carl C. Coleman, logging superintendent for Kinzua Pine Mills Co., says: "There's no question 'Caterpillar' Diesels will produce cheaper logs per thousand. Our lighting, loading and all skidding and road construction are done with this quality equipment."

The Kinzua Pine Mills Co. runs a big selective logging operation in Oregon. Cutting 25,000,000 board feet a year, the mills have one of the largest tree farms in the state, part of it located in Umatilla National Forest.

The whole show is "Caterpillar" Diesel-powered, from building roads and skidding logs to lighting the plant. The 16 "Caterpillar" units on the job include 8 D8 Tractors, a D6 Tractor, 2 No. 80 Scrapers, a No. 8S Bulldozer, 2 D3400 Electric Sets, a No. 12 Motor Grader and a D13000 Engine powering the Osgood loader.

Standardizing on "Caterpillar" Diesels and matched "Caterpillar" equipment brings real savings in operation and maintenance. Repairs and service, handled by one dependable "Caterpillar" dealer, are prompt and efficient. As a result every machine delivers more work hours at lower cost.

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LETTERS TO THE EDITOR

Forests and Patriotism

SIR: It is because of the truly patriotic nature of the work of the American Forestry Association that I have continued my membership through many years. My health has prevented me from taking an active part, in attending meetings or in securing a sufficient number of new members. Yet I have felt that in paying my dues from year to year and in sharing our beautiful magazine, AMERICAN FORESTS, with others, I was doing something for the good of my beloved country which has been so blessed in physical resources—and whose opportunities for serving humanity are a sacred trust. May we ever be true to that trust. — *Henrietta W. Slicer*, Baltimore, Maryland.

On Slowing Down the Tree of Heaven

SIR: The ailanthus, also known as the "Tree of Heaven," is a dangerous weed tree which we ought to control. We see it on every street corner, and now it is spreading out into the country, taking up a lot of good forest land. Weed trees should be destroyed and their places taken by good American forest trees, even if it does take longer for them to mature. The ailanthus may be all right in Brooklyn, but it doesn't belong out in the country. — *W. G. Duncan*, Louisville, Kentucky.

Too Many Deer

SIR: I have read with great pleasure and profit John V. Hoene's article, "Our Deer Must Be Managed," in the October issue of AMERICAN FORESTS. I thoroughly agree with him as the deer in Pennsylvania not only have destroyed their own food and cover but have made it almost impossible to plant trees in our deer territory.

In 1906, when I was a member of the Pennsylvania Game Commission, we imported 1,100 white tail deer. This was because deer were practically extinct in this state. Many of the northern bucks weighed 200 to 300 pounds. Today, owing to starvation, the average weight of our bucks is 115 pounds. If the sportsmen don't soon take action, the Humane Society should.

In the years 1938, 1939 and 1940, the official kill in Pennsylvania was 421,924 deer of all sexes and ages. This does not take into account marauding deer killed by farmers and those killed by bootleggers and automobiles. Actually, more than 500,000 were killed in Pennsylvania. We still have too many deer in the state.

I am glad you have taken this subject up. I hope the Hoene article will be read by naturalists and sportsmen throughout the country.—*John M. Phillips*, Pittsburgh, Pennsylvania.

Dollar-Foolish Policy

SIR: I am very much interested in your editorials and the publication of letters in your magazine in regard to the short-sighted policy of our Congress when cutting funds for our national forest and other conservation measures.

Why must our Congressmen who are supposed to be intelligent persons insist on this penny-wise, dollar-foolish policy?

Isn't it also true that Congress has cut the funds for the care of our American Indians to such an extent that some are reduced to extreme poverty?—*Earle W. Norton*, Pawling, New York.

Forest Range and Our Meat Supply

SIR: In your October issue a letter from William H. Carr, chairman, Arizona Wildlife Federation of Tucson, seems to uphold the Forest Service in reducing the land on which cattle may be grazed.

It is my understanding that this reduction has often been arbitrary and unfair, and at a time when the people of this country and of other countries are urgently asking for a higher production of food, it seems eminently wise for Congress to make a thorough investigation into the whole question of grazing rights, and the effect of the Forest Service's policies on the cattle industry, and hence on the amount of meat on our tables.

Mr. Carr does not mention the part that large herds of elk play in this whole situation, but I am informed that elk are increasing at a rapid rate, and that it is feed for them that the Forest Service is securing by reducing the number of cattle allowed on our ranges. This hurts the American consumer of meat, by making meat scarce, and presumably raising its price. It also hurts the men in the cattle industry, many of whom are permitted to graze such a small number of cattle that any reduction would be a hardship, and make their operations uneconomic.

Interestingly enough, in this same issue of AMERICAN FORESTS there is an article entitled "Our Deer Must be Managed," by John V. Hoene, which states that the large number of deer in some states has depleted the forests in some cases beyond repair, and in so doing has destroyed its own food supply, causing the starvation of many deer. His conclusion is that the number of deer must be reduced.

Considering the use of the range over which the Forest Service has been exercising great powers, it seems clear that the cattle should be given preference over the elk, and that the cattle owners should have some right of appeal over the arbitrary reduction of their cattle grazing rights by the Forest Service.

That the Forest Service has many fine and devoted men I am sure is true. But that the policies of the service should be reviewed from time to time, and brought into conformity with existing needs is equally clear. I am glad a subcommittee of Congress is working on this problem.—*Elizabeth B. Boyd*, Winnetka, Illinois.

A Vote for the Hawks

SIR: Mr. Paul Squibb's letter in the November "Forest Exchange" is without doubt one of the finest conservationist letters that I have ever read. To think, he even put in a kind word for hawks, owls and bobcats. He even gives them credit for destroying rodents.

Mr. Squibbs' letter should have been published in every sportsman, hunting and fishing magazine in the country. Perhaps then so-called sportsmen might read it and thereby profit. For all too often hawks, owls and bobcats are considered as vermin.

I intend to save this letter to show to my friends as a real piece of thinking from a man who is both practical and a nature lover.

It is a miracle in itself that Mr. Squibb does not condone the wholesale destruction of all rodents. Even these often destructive animals are interesting.—*Raymond J. Brooke, Jr.*, Ardmore, Pennsylvania.

Thank You

SIR: May I commend you on the good job you are doing in keeping us informed. AMERICAN FORESTS, in my opinion, is the finest publication in the field of forestry.—*Roger K. McDonald*, Houghton, Michigan.

When does a man start slipping?

The moment comes to every man.

The moment when he realizes that he isn't the man he used to be . . .

That the days of his peak earning power are over . . .

That some day not so very far away some younger man will step into his shoes.

When does this time come?

It varies with many things.

But of one thing you can be sure. It will come to you as surely as green apples get ripe– and fall off the tree.

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Get on the Payroll Savings Plan—or the Bond-A-Month Plan—today.

Sure saving because it's automatic—U.S. Savings Bonds

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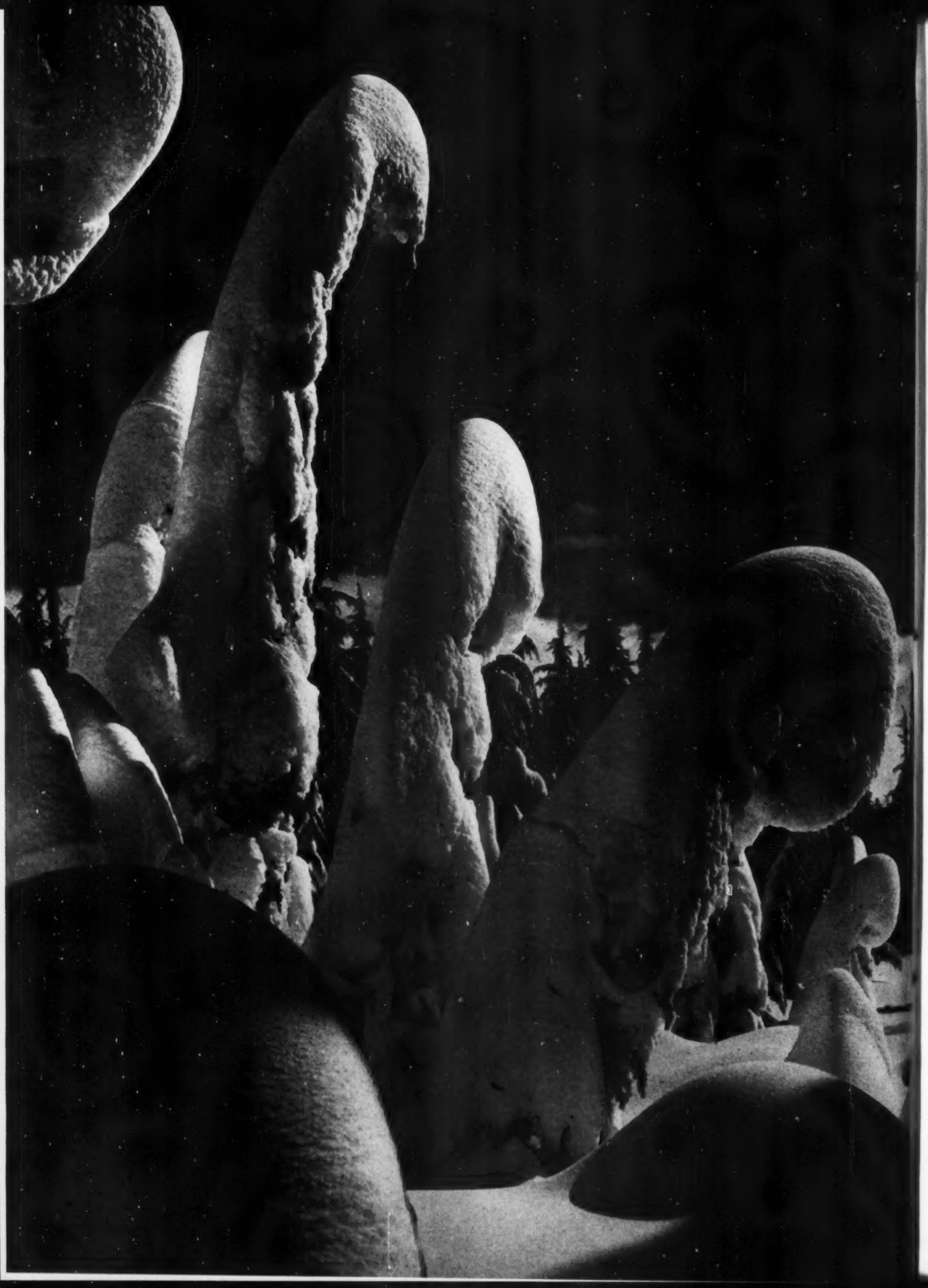


Editorial

Let Vigilance Be the Watchword

As the second regular session of the 80th Congress convenes on January 2, the American people have reason to keep a critical eye on how their elected representatives acquit themselves as custodians of the country's resources. Present and future resource needs of an America committed to peace but faced by international developments to ready itself against war, and at the same time to draw upon its natural wealth to help reconstruct a resource-starved Europe, would seem reason enough for members of Congress and citizens in general to be alert to any evidence of conservation derelictions.

But is it? A perspective of the first session of the 80th Congress is not reassuring. In fact, it underscores the need for increased vigilance. The first session was held at a time when members of Congress and the public were preoccupied with vital problems—both domestic and foreign—of immediate urgency. Conservation of natural resources was thus crowded into the background and an atmosphere was created that invited danger of ill-conceived legislation inimical to long-range conservation becoming law without hard-pressed members of Congress realizing its full implication. There was the attendant danger that special interests would take advantage of the nation's preoccupation to slip through anti-conservation bills.

Indeed, that is exactly what happened. The House, without a dissenting vote, passed the Lemke bill (H. R. 0459) which would open the forest resources of Alaska, including choice stands of virgin timber in the national forests, to timber homesteading by war veterans (see "Timber Homestead in Alaska," November issue). When it was before the House Committee on Public Lands, it doubtless was the belief of those who were acquainted with the bill, and of some members of Congress, that it would be blocked on the floor of the House. But in the rush during the closing days of the session it passed without a voice being raised against it. Thoroughly impractical from the standpoint of both veterans and good conservation, the bill is now pending in the Senate where lies the last hope of stopping its passage.

Again to illustrate with Alaska, the first session of the 80th Congress, under the guise of economy, eliminated all funds for the fire control service charged with protecting 120 million acres of the territory's forest resources. This ill-considered action was followed by an outbreak of forest fires that swept over a half million acres. The loss in terms of forest and related natural resources is yet to be reckoned, but it is a glaring example of the high cost of petty and misplaced economy.

Similarly, misdirected economy has all but wrecked the Taylor Grazing Act, passed a decade ago to conserve and build up the forage resources of the public lands of the western states. And there is the spectacle of insidious legislative maneuvering on the part of special livestock interests to hamstring conservation management of range lands in the national forests and to acquire for themselves grazing lands of the public domain. There is the further spectacle of a subcommittee of the House Public Lands Committee holding hearings throughout the West widely publicized as prejudiced in favor of the stockmen's scheme—a committee which recommended to the Secretary of Agriculture what amounts to his relinquishing control of the numbers of livestock permitted to graze on national forest lands for a period of three years. This in the face of Forest Service field determinations that certain reductions in livestock numbers are necessary to protect the range from overgrazing.

The present Congress is meeting again in a greatly intensified atmosphere of economic and political pressure. The cost of the Marshall plan, or whatever program of world assistance evolves, for example, will strengthen the proponents of governmental economies in their well-meaning attempts to reduce the tax burden, and the preoccupation of Congress and the public with these and other problems will make fertile ground for "special interests" legislation. As we see it, the danger is even greater now than in the first session that misguided economies and misdirected pressures may result in legislation which will undermine to the detriment of national welfare and defense the advances made so far in the management of our natural resources.

The need of guarding and developing these resources as a foundation of future security and welfare has never been greater, nor has the need of public vigilance ever been more imperative to hold Congress to a strict accounting of its stewardship of the country's natural wealth.

"Winter in the Cascades"—Oregon. Photograph by Ray Atkeson

The rebirth of Aspen

Nestled in the Colorado Rockies, with a great forest wilderness at its door, this old mining town refused to die — is coming back as a four-season outdoor playground

By ELIZABETH FORBES

MANY of Aspen's present residents first visited there on a ten-day vacation. Instead of using the other end of those round-trip tickets they sent home for the rest of their belongings. Newcomers liked the leisurely way stores closed at noon. The tall, encircling, ragged Colorado mountains were restful to their eyes. And the quietness of neighborly conversations on street corners was more pleasing to weary ears than the clang of city streetcars. To be in Aspen was like dropping into another world.

Aspen hasn't always possessed this calm. Back in the silver-booming days it housed 15,000 people who read five daily newspapers and went to seven churches. Then, in 1893, the silver market busted—and busted Aspen financially. People began to move on—all but about 500. This small company liked Aspen. It was more than just a place to earn a livelihood—it was home. So they settled down, determined to get along somehow. And Aspen became quiet—very quiet.

When skiing came to Aspen—it came in a big way. It boasts fifty miles of ski trails and the world's longest chair lift

Charles E. Grover

Then suddenly something happened —something to bring prosperity back to Aspen. At present this former mining town is one of the foremost skiing centers in the country. Possessor of the world's longest chair lift, it boasts of fifty miles of excellent trails and slopes for those who "ride the boards." A new T-Bar lift has been constructed on a gentle slope for the novice. Here a beginner may set his own speed and make turns to his ski heart's content.

For those who like to leave the trails and see wild and untamed country and explore seldom-skied mountains, Aspen compares favorably with anything Europe, or the rest of the world, has to offer. Out there you seldom see anyone except members of your own party. You have the feeling that you own these mountains.

Otto Schniebs, "the father of American skiing," was among the first to explore the Mt. Hayden area, approximately eleven miles from Aspen. About those great, white open spaces he said, "Here is some of the finest touring country in the world."

The people of Aspen, in cooperation with the U. S. Forest Service and the National Ski Association, are now working on a chain-of-huts program. Selected sites will be located one day apart. The ultimate

Charles E. Grover

Paradise for those who like their skiing amid grandeur in untamed country is beautiful Hayden Basin in Colorado's White River National Forest — only eleven miles from Aspen

aim is to have enough cabins so that a skier may spend several weeks "in the hills" and never ski the same terrain two days in succession.

The first of these huts in the United States was given to the National Ski Association last year by W. T. Tagert, an Aspen citizen. Named Tagert Hut, for its donor, it is located at the foot of Montezuma Basin, about fifteen miles from Aspen. It is surrounded by skiing terrain that cannot be surpassed for beauty or vast open slopes.

Tentative plans have been made to build a cabin a day's trip from the Sun Deck, on Richmond Hill, in the White River National Forest. The Aspen Company has offered to furnish the material if local members of the Tenth Mountain Division will construct the cabin.

Another contemplated site, in the White River National Forest also, is northeast of Aspen, up Hunter Creek in the Williams Mountain Range. From this location skiers may tour over into the Independence Pass area where, because it is 12,000 feet high, snow conditions are usually good into July.

Companies, or individuals, who build on Forest Service lands must obtain a special permit. The construction must be durable, attractive and in keeping with forest environment. A prerequisite is that the cabins must be available to the public and, if a charge is made, it must be nominal and may be used only for maintaining the existing building or others in the chain. The creed of the Forest Service that "forest lands must render the greatest good for the greatest number of people in the long run," will be fulfilled here also.

Aspen didn't come into all this glory by luck or nature alone, although the present development could never have been accomplished without its native inheritance. The potentialities of Aspen as a winter resort were first recognized back in 1936. In keeping with "the spirit of Aspen" it was a former resident and mining man, Tom Flynn, who returned from California to view his former home from a different angle.

To carry out his ideas, the Highland-Bavarian Corporation was formed and one of the men employed to explore the possibilities was Andre Roch of Geneva, Switzerland, former world champion in university downhill and slalom. In cooperation with the newly-formed company, he developed plans for a mammoth ski resort near Ashcroft, twelve miles from Aspen.

The Forest Service was particularly interested in this development and on numerous occasions Ranger Fred A. Cook accompanied Mr. Roch on his explorations.

Andre Roch also spent much time investigating ski possibilities in the immediate vicinity of Aspen. He quickly recognized that Aspen was a candidate for a "ski center." He gave free ski lessons to the citizens and spent much time taking the young people on tours and in teaching them to enjoy this new sport. Although the mountains had been there forever, the only people who had previously used skis were prospectors, forest rangers and others

who needed them as a means of conveyance.

Skiing wasn't fun to them. It was work of the hardest sort. Now they saw skiing with different eyes. They loved it! If it afforded the people of Aspen amusement why wouldn't people all over the country be interested in coming there to ski? Here was the chance Aspen had so patiently waited for. Skiing could replace the dormant mining industry.

Under Mr. Roch's direction, the Aspen Ski Club was organized in 1937. He worked directly with the club in surveying Aspen Mountain which rises steeply from the south edge of town. During May he completed plans for a downhill trail, a slalom course, and a ski jump. In June he had to return to his home, but the work he had started did not stop.

Members of the Aspen Ski Club immediately set about clearing the downhill trail. Named Roch Run, in honor of its originator, most of the trail had to be cut through heavy growth of aspens and evergreens. For Saturday and Sunday accomplishment, with volunteer labor only, this was an all-summer job.

But the Ski Club did not stop here. By winter they had built a ski tow of their own invention. Crudely constructed, it was a six-passenger toboggan drawn by steel cable, driven by an old mine friction hoist, powered by truck motor. It served the purpose, though. Its erection called for quite an expenditure for such a small club, but sufficient funds were raised from the townspeople. No notes were signed. What if they didn't get their money back? They were helping Aspen. But by the end of the winter admission charges repaid every cent to those who had contributed in faith.

News of these un-skied, unexplored mountains spread over the country. Young skiers, who search out all the new spots, began to hear about Aspen. They gave it a try—and were not disappointed. In fact, the Ski Club had done such a good job of developing the runs that Aspen was selected for the 1941 national downhill and slalom championship races.

With the war the Highland-Bavarian program, with elaborate tramway, extensive runs and hotels came to a standstill. But enthusiasm in the Aspen Ski Club did not wane. They had waited before—they could wait again. Further improvements, of course, were out of the question. The members were satisfied to hold on to what they had gained.

At the war's end, many skiers from the Tenth Mountain Division, which had been stationed at nearby Camp Hale, decided to settle down in Aspen. They liked its ski possibilities.

Friedl Pfeifer, winner of the Grand Prix de Paris races three times and also three times winner of the Gross Glockner, on which he still holds the record, was particularly interested in developing Aspen. He laid out extensive runs from the top of the mountain, made plans for a giant chair lift, and assembled an excellent group of ski instructors.

But something was still lacking. Friedl and his associates had been busy fighting a war and they didn't have the necessary capital to develop Aspen as a ranking ski center. It was then that Walter Paepcke, Chicago capitalist and president of Container Corporation, agreed to help. He was instrumental in forming a corporation which erected the giant chair lift. He also bought and redecorated seventeen of Aspen's former homes. His chief interest was in restoring and preserving the charm of the booming '90's, so the decorating was done without loss of the original plan. He leased famous old Hotel Jerome and had it redone from basement to roof. Another old building was converted into a dormitory for young skiers with thin pocketbooks. Old office buildings were jacked up and made into modern apartment buildings to accommodate people who wished to go to Aspen for the season.

Aspen's revival now is aimed not only at making it a great ski center, but a year-round resort. In fact, summer sports gained recognition in Aspen long before consideration was given to winter sports.

Back in 1933, the Maroon Bells-Snowmass Wilderness area in the then Holy Cross National Forest (now White River National Forest), was formally approved and designated by the Forest Service for backcountry recreation. This meant that no roads or commercial development would be permitted in the area. In 1934 the Maroon Lake road, outside the wilderness area, was completed by the Forest Service. This provided

Charles E. Fifield

Aspen, the town with a past and a future, as it appears in summer. The vast Maroon-Snowmass Wilderness lies just beyond the horizon

an ideal take-off point for pack trips in the wilderness.

In 1938 the Trail Riders of the Wilderness, under the direction of The American Forestry Association, conducted the first of a series of expeditions into the Maroon Bells-Snowmass Wilderness. The Association realizes that few people have the time, money, or experience necessary to organize such an adventure. Therefore, in order that these last frontiers might best serve the American people, the Trail Rider idea was developed to provide simple and inexpensive means for their enjoyment.

Mrs. Rich "Tommy" Thomson, of Glenwood Springs, handles the packing end of the Association's expeditions. Once you've answered the call of "boots and saddle" with Tommy that experience becomes a memory that boomerangs again and again. For she has a way of making the wilderness come to life and become a part of you.

Long after you've returned to the city you remember how you led your horse across shale-covered Electric Pass, or how straight down West Maroon Pass looked—and was. You smile when you think of the fish you caught in Snowmass Creek, the hot-water swim at Conundrum, and how your tent was pitched on the Crystal River so you could hear the musical roar of the water all night long.

The Forest Service cooperates with The American Forestry Association in making these expeditions a memorable experience in the lives of the riders. Ranger Charlie Fifield accompanies the riders through a portion of the White River National Forest, and Ranger "Steve" Stevenson guides them successfully through the Crystal River district. When the Gunnison National Forest is reached at Copper Lake, Ranger Cliff Chappell takes over and personally escorts the party through his territory.

The wilderness spreading out from Aspen offers the summer trail rider or angler such grandeur as Hagerman Peak at Snowmass Lake

Charles E. Grover

The Aspen area has long been famed for excellent fishing. There are many streams within walking distance—Roaring Fork, Hunter Creek, Castle and Maroon creeks. Also there are those exciting seldom-fished lakes and streams that can be reached only by packing in. Here the waters abound with fighting trout that delight any fisherman.

To these native gifts for vacationers, Aspen last summer came forth with new features. In keeping with Mr. Paepcke's dream to make Aspen a year-round resort, a touch of culture was added. The old Wheeler Opera House, which hadn't been used for thirty-four years, was rejuvenated and the walls that previously echoed strains from the famous operas now echoed music of a different kind: the Chicago Symphony Orchestra trio, Dorothy Lane's harpsichord, Burl Ives' ballads and Richard Dyer-Bennet's minstrel songs.

Culture isn't for the summer months only. In June Mr. Dyer-Bennet, leader of modern balladeers, opened a permanent school of minstrelsy in Aspen. A new departure in the music field, it is the only school of its kind. In the fall, his wife, Melvene Bennet, opened the School of the Dance for amateurs, professionals and children.

In the summer western color runs rampant in the form of entertainment, with a rodeo, square dancing in the streets, a gala fishing festival and chuck-wagon dinners. A new club, two miles from town on Castle Creek, has been organized. Fishing, swimming, tennis, skeet shooting, barbecue picnics and steak frys are featured. In the winter it is an after-ski haven with facilities for modern and barn dancing, cocktail and dinner parties. The fish pond is converted into a skating rink and a ski run ends directly in front of the club. The name, "Four Seasons Club," epotimizes life in Aspen, where there is something to do every day in the year. There are no "off" seasons.

Aspen is a town with a past—a colorful past tinted by the industry of mining. Aspen is a town of the present—where people launch new ideas and give full expression to originality. With the opportunity for adventure both in fun and business that only the West can offer, and with sound business men as guides, Aspen's future looks bright.

DEATH OF THE KENAI

Here is the story of what happened this summer to the Kenai Peninsula, famed for its wildlife resources, after Congress wrecked the Alaska Fire Control Service

By HAL GATES

ALL America was the loser in Alaska's great Kenai fire which this past summer swept over one of the world's famed game preserves. The capital of the largest moose is today black and dreary. Already streams where giant rainbow trout spawn are being poisoned with leached lye from the ashes. And some of the millions poured into wildlife conservation in Alaska have been lost because there were neither men nor money to fight the fire (see Editorial "Congressional Backfire" in the October issue).

Carelessness started the fire — reputedly a match tossed into brush by a road worker. But heedlessness in Washington let it go uncontrolled. Just at the time the fire was gaining momentum, agents of the Alaska Fire Control Service were turning in their equipment and seeking other jobs because of a budget slash.

The tally is not yet complete but an estimated 300 thousand acres of browsing land, lakes and streams were affected. The most scenic part of the new highway from Seward to Hope was stripped of beauty—the highway which soon will connect with Anchorage and the rest of Alaska's road system.

Moose were driven onto Chickaloon flats, the smell of their hides telling of their escape from their worst enemy. Other fleet-footed creatures made a clean getaway—but the young of all breeds were less fortunate.

The U. S. Fish and Wildlife Service believes that ducks were the hardest hit for the fire struck during the nesting season. The lakes of this area are at the head of many tributaries to the Pacific Flyway. And next year new grounds must be found by the survivors.

As the fire swept over drought-parched acres, past lakes and rivers famous for scenic grandeur and big fish and game, all the drama of the wilds, told of every major forest fire, was enacted. As observers' planes dipped through gaps in the acrid haze, moose and bear, wolf and wolverine, fox and hare, squirrel and lesser fur-bearers could be seen dashing to safety. The larger creatures plunged into lakes together, old enmities forgotten in their dread of a common foe. Behind were left the young—and animals too slow of gait to make an escape.

For days the fire threatened to burn up the ravines towards Moose Pass, to break uncontrolled into the 29,000 square miles of the Chugach National Forest where nothing humanly devised could have stopped it.

Other anxious days were passed by residents of historic villages on the Kenai Peninsula—Nekishka, Salamatof and Kenai. Or rather by those left behind when their Russian descended inhabitants headed for the annual salmon fishing. But shifting winds sent the fire back to Skilak Lake and along the Kenai River to consume timber and brush missed by previous days' crowning. High winds fanned the flames from tree top to tree top. Some of us saw these bursts, like giant blowtorches, shooting 100 feet at a stretch.

And who was there to fight this inferno? Twenty-four men from the Alaska Road Commission, which had lost camp and equipment in the first days of the fire, a member of the Fish and Wildlife Service and two civilian volunteers. When the fire was a week old and promised rains did not come, the Army flew in two-score men from Fort Richardson. This was a small force at best, but by then the Army had its own troubles, a fire on its reservation near Anchorage. Also, it was dispatching men to help curb a fire sweeping the steep slopes near Pioneer Peak on the Palmer Highway, a daily threat to homesteaders, many of them former GI's. And these were but three of the 24 fires then reported in timber and on tundra all over the territory.

At first, the soldiers could do little more than bulldoze firebreaks to save the village of Kenai. Fifty-five men could not stop a blaze leaping along a 75-mile front. Eventually a shift in the erratic winds and the long delayed rains put out the fire—but not before the peninsula blaze of the 1880's had been re-enacted. This was the fire that ruined the caribou grazing lands of the Kenai and drove off the herds. It took 50 years to restore the browse that supports the moose of today.

National consciousness of the disaster was not roused until word was flashed that the noted Russian River area was threatened. Then Congress, or rather some conservation-minded congressmen, took an interest. For here was a name that was well known. Congressional parties which frequent the air trails to Alaska have caught giant trout in these waters. Two Presidents, Harding and Hoover, had fished there, and Secretary of the Interior Krug had only recently caught large specimens.

But the damage was done. On the fifth day of the fire the agents of the Alaska Fire Control Service turned in their equipment. The service was reduced to a skeleton office staff by fiat of Congress, when the budget estimate of $170,000 for Alaska fire control and suppression was disallowed. The appropriation for the Interior Department for the current fiscal year allowed only $28,000 for fire control over an area one-fifth the size of continental United States. A force of 31 men charged with watching this huge area was decimated. Some volunteered to fight the fires burning simultaneously in a score of places. Others had to seek other work at once. For the remaining weeks until the fires were extinguished by rains, the role of the service was limited to aerial surveys and direction and coordination of efforts by the road commission men and the soldiers.

(*Turn to page* 45)

THE AUTHOR is Alaska manager for the United Press—and personally covered the great Kenai fire.

Down in Alabama They Are Trying Something New in

SELLING FORESTRY TO THE FARMER

By CHAPIN COLLINS

DOWN in Alabama something is going on, forest-wise, that may turn out the answers to a lot of questions, which might be summarized in this manner: Are farmers and other landowners interested in good woods management? If not, why not? If they are, why don't they do more about it?

Back of this activity is the Alabama Forestry Council. And the project—"More Trees for Alabama" it is called—is attracting attention, not only on its own account, but because it provides a pattern for similar activities in other states.

The small woodland is now recognized as a primary problem in American forestry. This is so because small woodlands, in total, make up the bulk of all commercial forest lands. This is true, also, because the average small owner is doing less to improve his woodlands, to manage them for continuous production, than any other class of owner.

This being the case, the first query to make is, "Why?" Other types of forest owners have been doing an increasingly better job, and the reason why they have is because they find forest management pays.

Many tracts, booklets, pamphlets and untold reams of mimeographed bulletins have been produced to tell the farmer and other small owners what they should do about their woodland. Because little has happened, some have concluded that the educational process has failed. Actually, it seems more reasonable to conclude that the *methods or types* of education have failed.

Take the farmer. His primary business is raising yearly crops from plowed fields or pastures. Usually, he has a woodland, but his energies and interests have been centered on other things. Behind him has been a tradition that the forest was an obstacle, something to be cleared away. And in many parts of the country, this idea isn't merely tradition, but a very present fact of today. His woods, then, have been incidental, whereas, with the large industrial operator, the woods have been paramount.

It would seem that, taking all factors into consideration, many attempts to reach the small owner have omitted an all-important first step—arouse his interest, tell him *why* and then *how*.

After all, this is the basic problem of advertising and merchandising, and the problem of selling good forest practices is no different. You have to make a customer *want* to buy your product; you never try to cram it down an unwilling throat.

That, at least, has been the reasoning of the Alabama Forestry Council in developing the "More Trees for Alabama" project. And members of the council know the problem if anyone does. Represented in it are the Conservation Department of the State of Alabama, the Agricultural Extension Service, the Soil Conservation Service, the United States Forest Service, the Tennessee Valley Authority, the State Department of Education, the State Agricultural Experiment Station, the Alabama State Chamber of Commerce as well as farmers, landowners, wood-using industries and others. The American Forest Products Industries, sponsors of the "Trees for America" project, as well as the "Tree Farm" and "Keep Green" movements, is sharing in this project.

As these organizations have approved it, the project seeks first to ask, and answer, the question: "Why should I bother with my woods?" Then, and only then, it seeks to answer "How?"

So, "More Trees for Alabama" falls into two natural divisions. The first phase is promotion—the second, instruction and demonstration.

While the opening guns in this operation will not be fired until January, there first came a long period of preparation, as essential in a program like this as it is in a military campaign.

It was last July that State Forester J. M. Stauffer assigned W. R. Sizemore to direct this project. Bill Sizemore took counsel with his advisory committee, which consists of Mr. Stauffer, John H. Ward, manager of the Alabama State Chamber, and Paul A. Swarthout, forest supervisor of the U. S. Forest Service, and the work began.

The biggest job was one of organization, but when it was done it reached every county in the state. More than 1,000 persons are serving on sixty-seven county committees. These are committees of the public, not restricted to foresters or forest industries. One county chairman is president of a large textile mill, another the head of a coal company, another a county superintendent of education, another a farmer. Several chairmen are judges. There is a bank president, a county sheriff, a number of merchants.

Then came organization of cooperating agencies, particularly with the view of obtaining enough foresters to help with the second phase of the project. So far, seventy-three foresters have agreed to serve. Twenty-five have been provided by state agencies, thirteen by federal agencies, seventeen by the pulp and paper industry, ten by the lumber industry and eight by other industries.

Nearly a thousand Alabama veterans are to receive special training in basic forestry. They are landowners themselves, and are expected to become focal points in their many communities for spreading the gospel of better woodland management.

The first short course in woodland management was held in the Little River State Forest from December

On-the-land demonstrations within walking distance of every woodland owner in the state—with scores of foresters to advise — highlight this all-out cooperative undertaking

7 to 13. The Vocational Agriculture Division of the State Department of Education, the Alabama Agricultural Extension Service and forest industries cooperated with the "More Trees for Alabama" organization in arranging the week's program. It covered tree and log scaling, fire control methods, planting, selective cutting practices, timber sales and other subjects of practical interest to owners of farm woods.

The first on-the-land demonstrations will start in January. Locations for these forest shows are being selected so that, ultimately, one will be held within ten miles of the home of every farmer in the state. They will feature selective marking and volume estimation.

Even before the campaign started, more than 125 spontaneous editorials, commenting on the project, appeared in Alabama newspapers. A mass meeting of interested farmers was held in one county. In Choctaw County, one man issued a public statement to the effect that he was making more money from his farm woods than from seventeen oil wells.

The project itself is starting with a paid advertising program in 140 Alabama newspapers, chiefly those reaching the rural field. These advertisements feature a specially prepared booklet, *Cash Crops from Alabama Woodlands*, of which 175 thousand copies will be distributed by county agents, forest rangers and others. A two-minute movie short, also featuring this booklet, is running in most of the theaters of the state. Several hundred prints of a new film strip, with an illustrated manual, are being exhibited to granges, schools and other organizations.

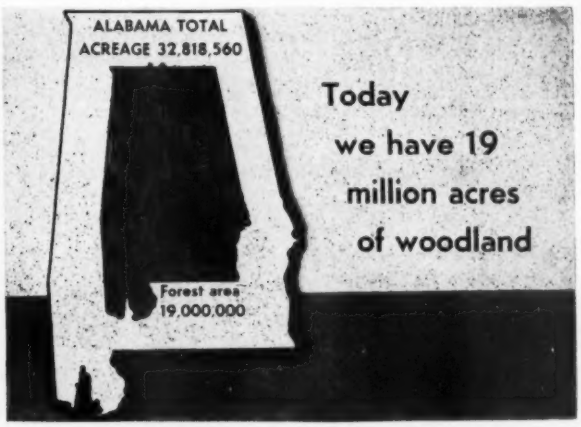
The first approach to landowners is best expressed in the booklet itself, which says:

"This book has suggested some ways of adding to your income by taking better care of your woods. It has not told the whole story, by any means. Its chief purpose is not to tell *how*, but to point out *why*.

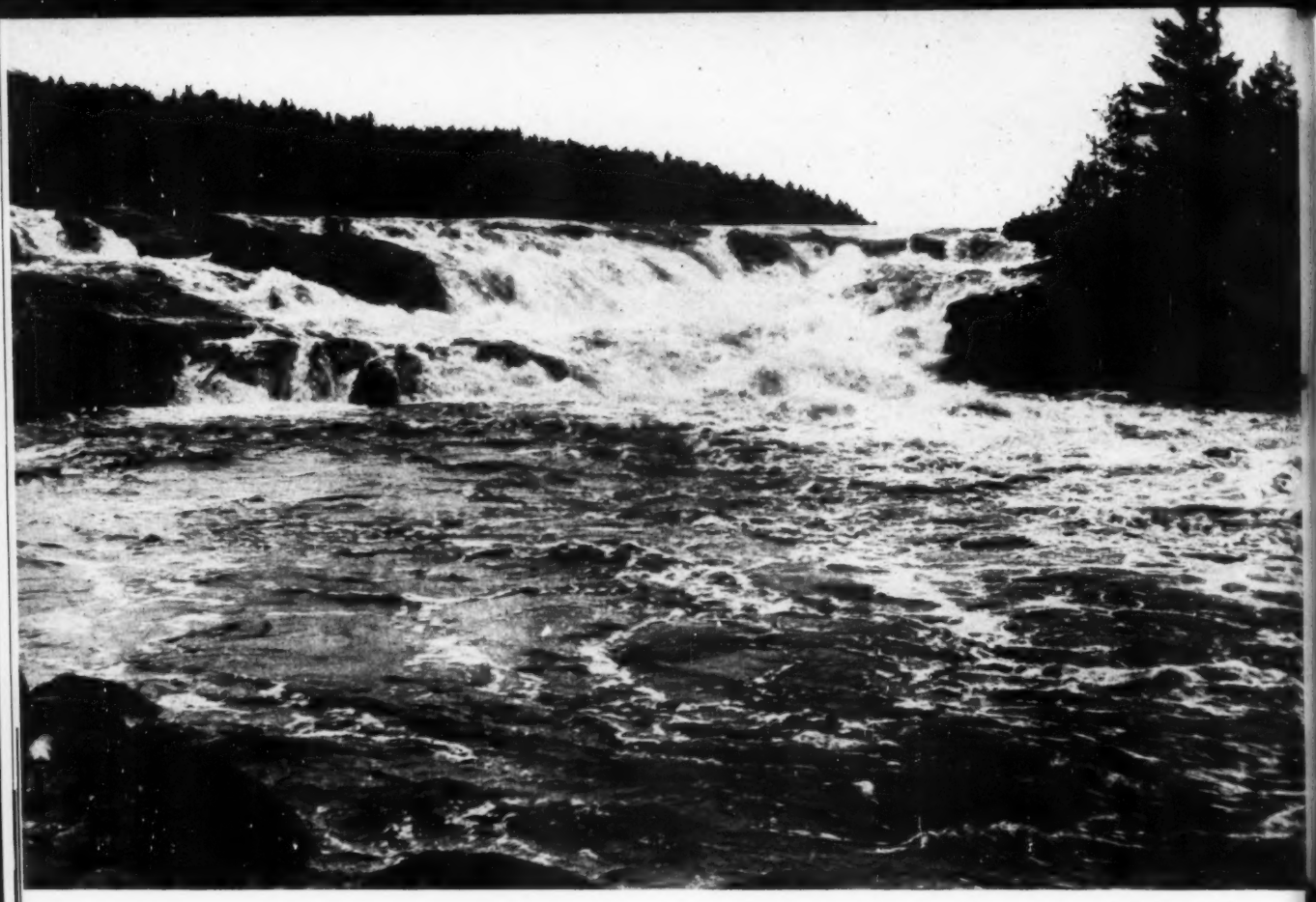
"Woods management is no road to quick riches. But, in return for reasonable work and reasonable skill, it pays well. Your woodland is part of your farm. Don't forget it. It should be a profitable part of your farm. There are ways to find out how your own woods can make more money. Help is available, both by way of advice and of actual service. They are provided by your state and federal governments and by private industry."

The project will not be perfect, but it has the merit of being a sincere, non-controversial approach to the woodland owner who is urged to do something for his own benefit.

While it is too early to chronicle results—and the ultimate results may be felt for years to come—this much can be said: Here is an instance in which the pulp and paper industry, the lumber and other forest industries, virtually every state and federal agency concerned with trees, and many others, too, have joined hands to do a job. Who can doubt that the job will be done?



Scenes from film strip shown in hundreds of schools and before farm and civic groups in Alabama. Its theme—"Cash Crops from Your Woodlands"



U. S. Forest Service

Breath-taking in its turbulence, primitive in its every aspect, the wildness of the area is exemplified by the white water of Curtain Falls along the international boundary canoe route

What shall we do about

QUETICO-SUPERIOR?

By A. G. HALL

A wilderness at their back door! That is what the Quetico-Superior area straddling the United States-Canadian border at the northwestern tip of Lake Superior is to 16 million people living within 500 miles of its borders.

On the United States side, it is mainly within the Superior National Forest. On the Canadian side, it includes the Quetico Provincial Park. In all, the area comprises the Rainy Lake and Pigeon River watersheds, the finest example of accessible primitive canoe country left on the North American continent. And it is less than 24 hours from Chicago by automobile.

The area is now faced with invasion by civilization. The threat has been hanging over it since the coming of white man to North American shores. Comparatively recent developments, however, spell the end of this remnant of untamed America unless plans for its preservation in primitive state soon bear fruit. Legislation to protect the lake country is being considered by Congress—and it has widespread support. Speed has become the major issue. Can the legislative compromises necessary to enactment of laws for the area's protection be reached before it is too late?

Embracing 14,500 square miles of land, two thirds of which is in Ontario and one third in Minnesota, it is a country of lakes, a labyrinth of narrow and broad waterways, dotted with islands, so that even the larger

Millions of dollars in primitive recreational values are at stake in the race to preserve this international wilderness

lakes appear as smaller streams coursing through a pine-clothed wilderness. No one knows the exact number of lakes in the watershed; they have been estimated at anywhere from 5,000 to 15,000.

In 1946, a total of 429,000 visitors enjoyed outdoor recreation in the Superior National Forest and spent over $2,000,000 in the process. (This is a conservative estimate. Studies now being made of the value of recreation to the local communities indicate that the figure may exceed $4,000,000.) There they traveled the routes of the early French voyageurs, fished in crystal-clear water, thrilled to the sight of game and came away refreshed after an experience outside the rim of civilization.

They had been in a country of moose, white tail deer and bear. They had invaded the last place in the United States where the great gray timber wolf may range without objection from owners of livestock.

A survey by the U. S. Forest Service shows that more than 29,000 of these visitors actually traveled by canoe or afoot into the wilderness proper. Many crossed into Canada. Under the Webster-Ashburton Treaty of 1842, historical waterways and portages along the Minnesota-Ontario border are free and open to citizens of both countries. The primitive experiences are found in the "roadless areas," 1,023,640 acres of land and water in the northern portion of the forest. Extending from east to west about 110 miles and averaging eighteen miles in breadth, the roadless areas are located in Cook, Lake and St. Louis counties.

These areas are favored haunts of the ruffed and spruce grouse and snowshoe hare. They are the home of the brush wolf, red, silver and cross fox, bobcat, lynx, beaver, mink, otter, fisher, weasel, marten and other fur bearers. Among the myriad waterways the mallard, teal and black duck build their nests. Geese descend during their seasonal migrations.

In an average year, the area draws visitors from thirty-nine states and several foreign countries. Sixty percent bring tourist dollars from points outside Minnesota. And the area is not only a lure for the hiker and

canoeist. Many of the 200 thousand motorists who traveled through the Superior National Forest in 1946 doubtless were attracted by the proximity of the primitive country.

The roadless areas attract mainly young recreationists; ninety percent of the canoeists are twenty-five years old or younger. It is not an exclusive area for the rich; eighty-five percent of the wilderness explorers have annual incomes of less than $3,500.

On the Minnesota side great eco-

Famed for its wall-eyed pike fishing, Pawn Net Narrows on Lac La Croix presents a typical scene in the border lakes region — vast water expanses, dotted with pine-clothed islands

U. S. Forest Service

U. S. Forest Service

After travel over lakes and portages, three Iowa school teachers enjoy a meal topped with wild raspberries from a nearby patch

nomic values have accrued from the attractions of the roadless areas. Income on the Canadian side is just beginning to be realized. As Canadian guides and outfitters become more active, more people will visit the areas on both sides of the border.

Local people look upon the primitive aspects of the Quetico-Superior as the main lure attracting recreationists to the north country. While doubtless some would prefer unrestricted development of the area, most of them realize that such development would destroy the very qualities which prompted it in the first place.

The recreation business in Minnesota as a whole ranks third in economic importance, being exceeded only by agriculture and mining. This includes other types of recreation found abundantly elsewhere in the state, but only the Quetico-Superior country has the unique features of primitive conditions. Efforts are being made to keep it that way.

It is not the aim of conservationists and local business men to bar other types of recreation from the Superior National Forest. The forest is large enough to support many types with proper zoning. Around the fringe of the roadless areas there are ample shorelines for the development of resorts, large public camp grounds and picnic areas, landing fields or landing lakes for aircraft, hotels and other tourist accommodations. From such developments, the wilderness lover may range into the roadless area.

Of the total acreage in the roadless areas, seventy-four percent is owned by the people of the United States, twelve percent by the state of Minnesota and fourteen percent, or 117 thousand acres, is privately owned. This last fourteen percent gives rise to one of the most vexing of problems to plague public land administrators.

Except for a small number of structures such as ranger cabins, Forest Service boat houses and fire observation towers, all permanent buildings within the roadless areas are privately owned. There are sixty-five such developments — forty-one are resorts, twenty-two are summer homes, and two are homes for year-long occupancy. (Not being suitable for agriculture the land is not farmed.)

Recent and persistent expansions of private development, and especially in locations previously undisturbed, has caused proponents of the wilderness idea a long series of sleepless nights. Further to complicate the situation, the ever growing use of aircraft looms as a final and decisive threat to the primitive qualities.

Hydroplanes bringing fishermen and hunters smack down in the middle of primeval conditions destroy all illusions and enjoyment for the real lover of primitive solitude. Imagine your own feeling if, after having paddled a canoe for days, carried it and your equipment across countless portages, finally reaching your destination on some remote waterway—*Zoom*, out of the sky drops a plane loaded with picnickers who "just flew up from Minneapolis for the afternoon!"

This situation occurs not only on lakes in the immediate vicinity of the developed holdings, but it can and does happen with perplexingly increasing frequency on even the most remote waterways. The Forest Service has no control of the surface of the navigable waters, not even where the waters are surrounded by federally-owned land.

Since the war, air traffic has increased by leaps and bounds. Chester Wilson, commissioner of conservation for Minnesota, reported eleven seaplanes based at Ely in 1945, "carrying passengers and supplies to resorts in the interior, and even transporting lumber and other materials for new construction." In 1947, it is estimated that the number has increased fifty percent or more.

Thus the plague of use problems grows with the steady march of what is called civilization. It is a plague that can be controlled only by means more drastic than have been attempted to date.

The history of the Quetico-Superior country antedates the coming of the white man to North America. Originally, it was a hunting and fishing ground for the Indians. Later it became a thoroughfare for travel by explorers, missionaries and fur traders. By the early 1900's, it was known internationally as a remnant of the wild and as one of the world's outstanding canoe countries.

When in 1909, President Theodore Roosevelt established the Superior National Forest, he took the first in a long series of steps leading to today's opportunity and problem.

The President's proclamation of the national forest was quickly followed on the Canadian side by the creation of the Quetico Provincial Park.

It was not until the 1920's, however, that real opposition to developments and trends inimical to wilderness preservation was generated. The first show of strength came in 1925 when a proposal was made for the development of water storage for power purposes on many of the lakes in the Rainy Lake watershed. The Quetico-Superior Council was formed to oppose it. The council is still a driving force. Around its banner of wilderness preservation rallied a large number of national and local organizations. The work of the council and other groups and individuals led to such widespread interest in a program for preservation of the primitive values that Congress, in

1930, passed the Shipstead-Nolan Act.

This act reserves the timber along the shores of streams and lakes, prohibits the sale of federally-owned lands within the watershed area, and prohibits the changing of natural water levels except in minor respects when required for logging. A similar act passed by the legislature of Minnesota in 1933 imposes the same restrictions on the state-owned lands within the boundaries of the Shipstead-Nolan area. Border water levels are further safeguarded by a treaty with Canada, ratified in 1940, under which the International Joint Commission has jurisdiction over the waters, its recommendations being subject to ratification by the two countries.

A small primitive area had been established by the Secretary of Agriculture in 1926, and following the enlargement of the forest ten years later much sentiment was expressed for similar protection on a greater scale. This resulted, in 1938 and 1939, in the establishment of three roadless areas. The largest of these is the Superior area which extends from Crane Lake on the western end, along the Canadian border to Big Saganaga Lake on the east. Two smaller areas are the Caribou at the far eastern end of the forest, and the Little Indian Sioux, south of the western end of the Superior area.

A significant force in the enlargement of the Superior National Forest to include more of the superlative canoe country, and in the setting aside of the roadless areas, was the Quetico-Superior Committee. Appointed in 1934 by President Franklin D. Roosevelt in response to growing agitation for preservation of the canoe country, the committee was charged with studying the problems of the area and submitting recommendations. In its reports, the committee has stressed the importance of public acquisition of sufficient area to safeguard primitive values and has urged the establishment of policies for the preservation of the region as an international forest and wildlife sanctuary. The five-man committee has continued active throughout the years, and recently its authority was enlarged by President Truman.

The Forest Service has observed not only the letter of the Shipstead-Nolan Act but has carried out the spirit of it as well. On a third of the area designated as roadless, *all* commercial timber cutting is excluded, not merely that required by the law.

The drawing of a national forest boundary around the area, however, had no effect upon the privately-owned land except to make it "purchasable" by the federal government. The land acquisition program of the Forest Service was halted during the war—but the war did not affect the operations of speculators who moved in to acquire private land within the boundaries of the roadless areas. Nor, s t r a n g e l y enough, did wartime restrictions on building have much effect on the development of these areas for resort and private home use.

The upshot of this has been a local boom in land prices within the roadless areas and, for the most part, the land is now beyond the reach of normal Forest Service acquisition funds. The Service may, of course, exchange some of its land outside the boundaries of the roadless areas for privately-owned tracts within, if the owners are willing.

Like the voyageurs of old, modern wilderness explorers guide their canoes on Duncan Lake. Outboard motors, airplanes and other mechanical devices are spurned in favor of paddles

U. S. Forest Service

Under the Weeks law, the Forest Service may purchase lands from such acquisition funds as may be appropriated from time to time by the Congress. This law can and is being exercised by the Service to bring lands at reasonable cost into the national forest system. But the purpose of the Weeks law is to acquire land for timber and watershed protection. There is no clear authority for the Service to purchase high-priced real estate. And high-priced real estate is just what many of the private lands within the roadless area have become.

In the absence of specific authority to pursue a vigorous program of acquisition, the Forest Service is whittling away at the problem as funds will permit. But whittling cannot keep pace with the growth of the problem.

Stepping into the breach as a temporary solution is the program of the Izaak Walton League, which has raised a fund of about $100,000 for the purchase of private lands within the area. It is the League's purpose to acquire and hold the lands until such time as the Forest Service may be able legally and financially to include them in the national forest. The League's program is another important piece of whittling, but still it is not the complete and final answer.

Nor do either of these steps prevent the use of aircraft as a means of entering the roadless areas. Everyone agrees, it seems, that a primitive area loses its appeal as such just as soon as it stops being truly primitive. Aircraft companies and operators will testify that their speedy means of travel can best serve the wilderness enthusiast by bringing him quickly to the edge of the wilderness.

But still the planes come in. In these instances, aircraft is not serving the wilderness lover, it is serving an entirely different class of recreationist. And there are roughly 11,000 lakes in Minnesota outside the primitive area where fishing, boating, hiking, picnicking and resort recreation may be obtained by persons not willing to undertake primitive travel. Exclusion of planes from the roadless area would not, the proponents say, interfere in the least with the enjoyment of the other types of recreation.

Legislation is needed (1) to provide funds for the public acquisition of private land within the roadless areas; (2) to permit exchange of private lands within the roadless areas for government land outside, but within the boundaries of the Shipstead-Nolan territory; (3) to provide adequate compensation to the counties in lieu of taxes on public lands; and (4) to control aircraft travel.

This is a big order. But a bill now in the Congress would accomplish the first three steps. Representative John A. Blatnik of Chisholm, representative of the eighth Minnesota district which includes Cook, Lake and St. Louis counties, has introduced H. R. 2642 to "safeguard and consolidate certain areas of exceptional public value within the Superior National Forest." A companion bill (S. 1090) has been introduced in the Senate by the two Minnesota Senators, Ball and Thye.

A lover of the outdoors, Congressman Blatnik became intimately acquainted with the beauty and primitive grandeur of the Superior country when he served with the Civilian Conservation Corps for two years. In presenting his bill before the House Committee on Agriculture, he was supported by practically every organized conservation group concerned with national or local problems.

His bill contains three major provisions. First, it authorizes the Secretary of Agriculture to acquire by purchase or condemnation private land within the heart of the present roadless areas. However, resorts and other improved real estate in contiguous tracts not exceeding 500 acres and bearing permanent structures suitable for human habitation at the time of the passage of the act would be exempt from condemnation. The bill authorizes appropriations of $500,000 for the purchase of lands.

Second, it authorizes the exchange of land within the roadless area for government land just outside which is suitable for resort development. Some owners of developed properties have already expressed willingness to sell or trade them to the government.

And third, the bill provides for the annual payment of twelve cents an acre by the federal government to the three Minnesota counties in addition to the present 25 percent of national forest gross income from the area, in lieu of taxes on the government-owned land.

Congressman Blatnik emphasizes that the twelve cents an acre is "an indispensable part of the bill." The acquisition of forest land by the government, he says, has reduced the taxable acreage of the counties to the point where they are suffering financially. As an example he points out that about fifty percent of Lake County is owned by the federal government. "The twelve cents an acre rate will involve an annual compensation to the counties of $55,302—this is an irreducible minimum compensation, and the estimate is a most conservative one."

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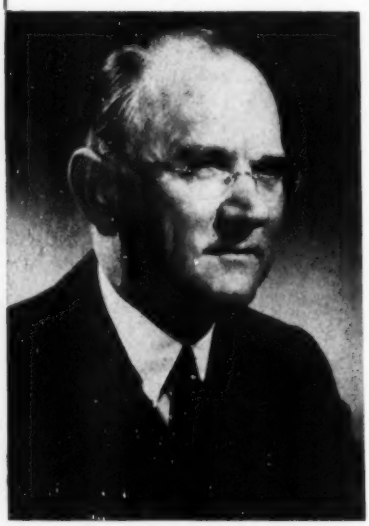
MY FAVORITE TREE

By WARD M. CANADAY

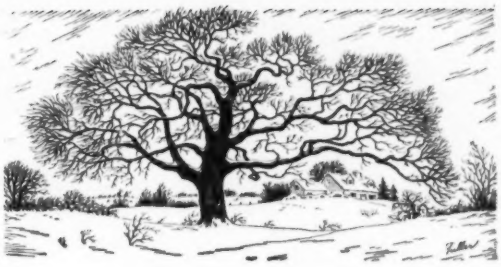
Chairman of the Board, Willys-Overland Motors, Inc.



ALTHOUGH partial to the evergreens which abound both on the grounds of my home in Toledo, Ohio, and on my farm near Woodstock, Vermont, my favorite tree is the sugar maple.

I like the maple for its stateliness, its sturdiness, its individual personality and its overall rugged beauty. Particularly, I am most partial to the ever changing symphony of color, ranging from the brilliant green of spring to the rich and colorful hues of autumn, which are characteristic of this beautiful tree.

HOW TO HEAT WITH WOOD



By ROBERT W. SCHERY and DENNISON H. MOREY

WOOD has long been one of man's most important fuels. Even today in this materially advanced country, almost as much wood goes into fuel as into lumber. Yet the average American knows little about fuelwood. When he throws a log on the fireplace, for instance, it is doubtful if he gives much consideration to its fuel qualities. More than likely his choice is dictated by the kinds of wood available to him, plus personal preferences due to past associations and emotional experiences. In a general way, of course, he knows from experience that some woods burn better than others, give more heat, or last longer—in other words, that superior heating qualities in certain woods are not inherent in others. But relatively few have made an effort to evaluate quality in firewood objectively.

Last year, for the Missouri Botanical Garden, the writers had opportunity to analyze statistically by actual measurement firewood qualities in a number of woods local to Missouri, and because their findings aroused considerable local interest among fireplace devotees, they are passing them on to others who enjoy a crackling fire or are forced by conditions to heat with wood. It is realized, of course, that the local character of this study places a limitation on the number of woods tested, but they have wide enough range to be of value to most eastern readers.

The value of wood as a fuel rests upon the nature of wood substance—that essential material of plant stems made only by green plants from air, water, sunlight and a handful of soil minerals. Wood substance, the walls of the tree trunk cells exclusive of any contained air, consists of complex chemical materials known as cellulose and lignin, plus small quantities of other substances such as oils, tannins, or resins. It provides roughly four calories of heat for each gram of wood burned. This is true of all kinds of wood, for all woods have essentially the same chemical substances in the cell walls. No matter what wood is chosen, be it softwood or hardwood, a pound of it, bone dry, can supply approximately 8,600 B.T.U. of heat. So the most efficient fuelwoods are apt to be the heaviest, for these generally provide more pounds of wood substance a log than do lighter woods. Selecting a few common firewoods from tables of the tests made, it is possible to compare relative weights as reflected by their densities—that is, weight a unit volume, or pounds a cubic foot as compared to the weight of a cubic foot of water:

Wood	*Density*
Apple	.80
Locust, black	.76
Mulberry	.74
Oak, pin	.71
Ash	.66
Birch, river	.55
Maple, silver	.54
Elm	.54
Boxelder	.41
Poplar, cottonwood	.38
Most softwoods (pine, fir, spruce, etc.), below	.40

Thus, neglecting other factors, the log of apple could give approximately twice as much heat as could cottonwood or a softwood, and a little more than half again as much as river birch or silver maple.

Firewood under normal conditions is never completely dry. When a log is first thrown on the fire heat must be borrowed from the already burning wood to expel or evaporate residual moisture in the new log. Thus "green," newly cut wood, will not burn as efficiently as will seasoned, or partially dried wood, nor is it easily ignited except in very hot fires. Referring again to the tables of woods tested, it was found, for the same woods previously chosen, the following percentages of moisture remaining after more than three months' outdoor seasoning:

Wood	*Percent moisture*
Locust, black	24.6
Elm	26.1
Ash	29.0
Oak, pin	35.7
Mulberry	37.4
Apple	37.9
Maple, silver	38.9
Birch, river	40.5
Boxelder	41.6
Poplar, cottonwood	52.1
Softwoods—not tested	

Thus cottonwood remained about twice as moist as black locust or elm, and would have wasted proportionally more heat from an established fire before burning.

After evaporation of residual moisture from a firelog, volatile materials or gases are next expelled. This, too, requires absorption of heat from the established fire, but unlike the expelled moisture (steam), these gases are mostly capable of burning and in turn releasing their own heat. Such volatile materials comprise the pyroligneous acid of hardwood distillation, and upon burning become the flame of a fire. A fire not sufficiently hot to ignite these gases, or with insufficient air available to permit complete burning, is wasteful of potential heat. Moreover, if such volatile materials are not burned immediately as volatilized from the log, they may condense on the chimney flue as "creosote," becoming objectionable in appearance and a subsequent fire hazard. A smoky fire without flame is conducive to "creosote trouble," and hard-to-burn hard-

(*Turn to page* 42)

Nothing can beat a warm, crackling fire for fellowship and relaxation—but it is important to know what wood to use and how to prepare it.

. . . And Now, Paper Houses

The U. S. Forest Products Laboratory is putting this newest idea in house construction to a final durability test. If it passes, the "sandwich" panel, or paper house, is here

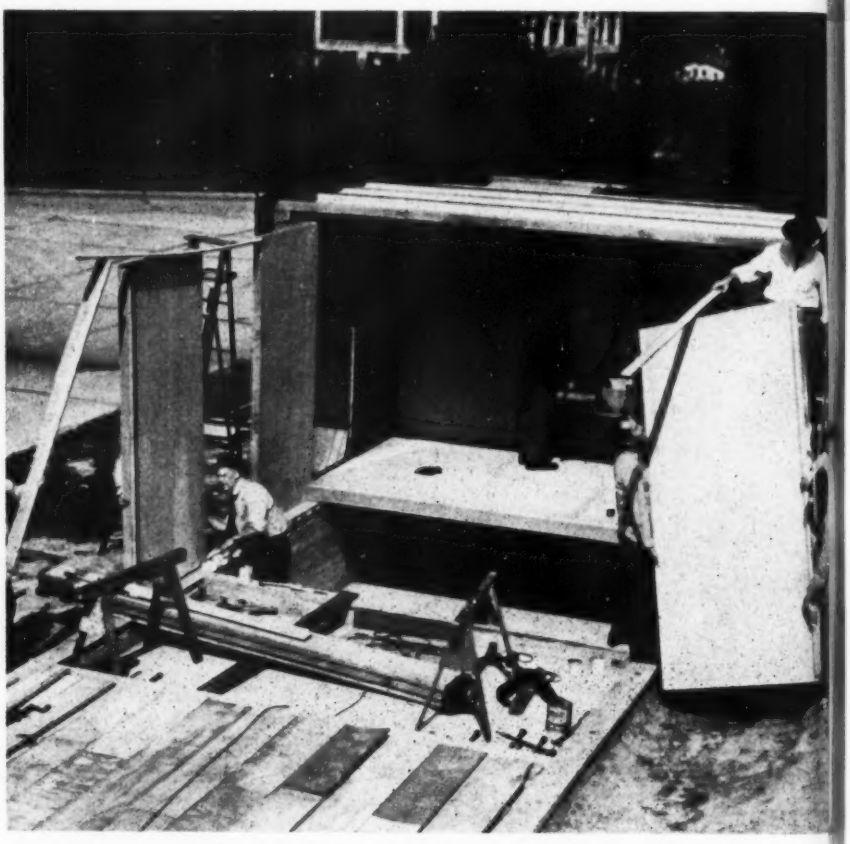
SANDWICH panels, originated in World War II for high-speed aircraft, are getting critical attention at the U. S. Forest Products Laboratory, Madison, Wisconsin, as the newest idea in house construction.

As part of its cooperative testing program with the technical office of the Housing and Home Finance Agency, the laboratory has erected an experimental structure consisting almost entirely of these new and radically different building panels. The box-like test unit stands outdoors exposed to everything Wisconsin weather can do to it — from midsummer's searing sun and drenching rains to the winds, snow and subzero temperatures of winter. The HHFA is interested in this and in all such approaches to low-cost housing.

How will these panels stand up to that kind of treatment? Well, nobody knows for sure. But laboratory scientists aren't particularly worried. They're certain, at any rate, that those panels won't dissolve like some witch's gingerbread haunt in a fairy tale. Preliminary tests in the laboratory have demonstrated that. The test structure is, however, expected to give a clearer idea of just what can go wrong in the course of time. And there's nothing like actual service to convince doubting Thomases that new materials are basically sound and useful.

Although it has four walls and a roof, this unit isn't a house. There never was another structure quite like it, and there probably never will be. Because it was built strictly for research purposes, a lot of things were done to it that shouldn't happen to a house.

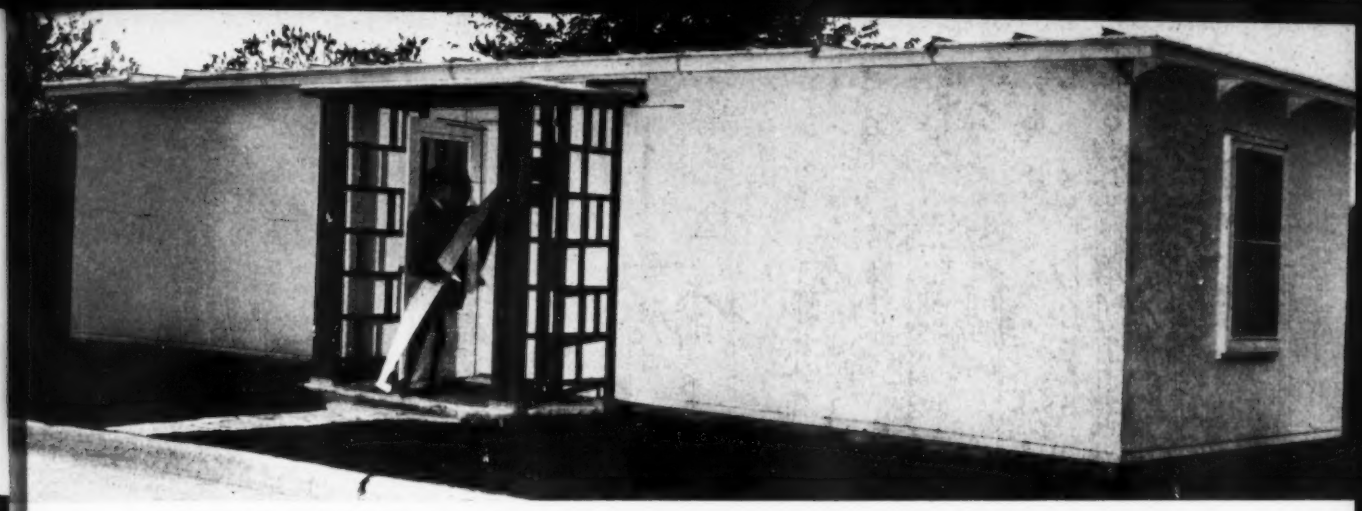
The basic idea of the sandwich is simple. You take a thick, light material called a core and glue to either side of it a pair of covers of some thin, strong sheet material. The result is a light-weight "sandwich" of surprising stiffness and strength. The stiffness, say the scientists, is the important thing; given enough of that, other strength properties will generally be adequate.



Assembling panels for a test unit. Light enough to be handled by one man, they can be joined together into an essentially frameless house

The principle involved can be demonstrated with a pad of paper. You can bend the pad fairly easily in your hands. But should you glue the sheets together, not even a Samson could bend it much without breaking it. That is what the engineers mean by stiffness—low deflection under load. The same thing is essentially what is achieved with sandwich panels. The glue bond prevents the covers from slipping over the core when bending load is applied.

The material used to make the cores in the Forest Products Laboratory sandwich panels is paper—a fairly close relative of the brown kraft paper bags in which you carry home the family groceries. Large sheets of this paper are treated with a synthetic resin, run through a corrugating machine, and glued together in



Don't let this chicken coop affair scare you off — your paper house won't have to look like this. It is merely a model built by the researchers to test the durability of the panels

honeycomb fashion, layer on layer. Thus you get a material that consists largely of tube-like openings filled with nothing more than air.

The covers glued to such cores may be thin metal, plywood, veneer, or some other sheet material. With modern glues, these covers can be bonded on so firmly that the glue joint is likely to be stronger than the cover. It takes powerful testing machines to shear that bond.

But it isn't strength and stiffness alone that make these sandwich panels look so promising as building units for houses of the future. They're light in weight—a four- by eight-foot wall panel two or three inches thick can be handled by one man. They can be mass produced in factories with machinery already made for other purposes. These honeycomb cores, with their multitudes of air cells, are excellent insulating materials. The panels can be joined together into essentially frameless houses—saving materials and labor in assembling joists, studs, rafters, and other parts of the conventional frame house.

Add to these qualities the fact that the surfaces can be factory finished for interior or exterior walls, floors, and ceilings and you have what looks like a pretty good bet for tomorrow's house.

Several manufacturers are exploring the possibilities of sandwich construction. Interest thus far has centered largely about sandwich panels consisting of paper honeycomb cores with aluminum covers. A number of experimental houses have been built of these panels on the West Coast and in the East—panels tested at the Forest Products Laboratory as part of its cooperative work with the Housing and Home Finance Agency. In fact, several aluminum-covered panels are included in the laboratory's experimental unit.

The unit also includes panels faced with plywood and veneer. The idea is to give them all a fair trial under identical service conditions.

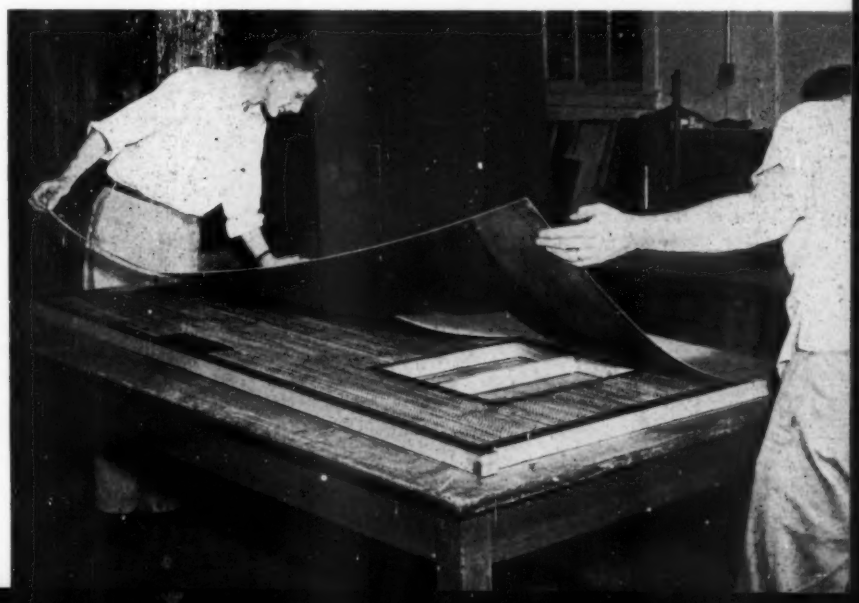
Some of the veneer and plywood covers are surfaced with another material stemming from wartime research, paper overlays treated with synthetic resins that make them highly water-resistant and improve their strength, painting, and wearing qualities. Such overlays are primarily intended to mask knots, checks, and other defects in the veneer in order to improve quality and get more complete utilization of scarce veneer logs. They also contribute to strength and stability of the veneer covers and help to block the passage of moisture through walls—important in cold climates where moisture can play havoc with paint and other finishes, set up decay hazards, and cause other troubles.

The laboratory's sandwich unit only incidentally and remotely resembles a house. Two partitions divide the long, narrow structure into three rooms, a central utility room flanked by two others in which certain ideas about heating and wood floor construction are being tested.

In one room, sandwich floor panels span a crawl space such as is often found under basementless houses. The purpose is to find out how these panels will serve under conditions that may promote dampness and winter cold underneath. Into the panels were pressed copper pipes during manufacture; hot water passing through these pipes heats the room during the winter. The effects of hot pipes on the sandwich panels will be critically watched, because this type

(*Turn to page* 45)

This is the "sandwich." Covers of sheet material such as plywood or aluminum, are glued to a core of corrugated, resin-treated paper



U. S. Forest Service

Timber Cinderella

Ignored for years, lodgepole pine has emerged from its chimney corner and is supplying a fair share of telephone and power poles now marching across vast rural areas in the West

By ROBERT E. MAHAFFAY

IT has been a long time since commercial timber operators did anything but sneer when they saw a lodegpole pine. Indeed, they have been known to go out of their way to find a stand of lodgepoles when ever they wanted to get some cussing, on general subjects, out of their systems.

Today the lodgepoles aren't cussing back, although the tables have been turned—they're being mighty sweet and demure, as always, and timbermen are falling over themselves to get aboard the profitable lodgepole gravy train.

For lodgepole pines, despised for decades as a "weed" cluttering up the woods, are providing a substantial portion of the telephone and power poles marching across rural areas of the West. Their harvesting means a new industry for Oregon and other western states. It means as well that the Cinderella of the forests has emerged from her chimney corner and is going to the party in a big way.

The humble lodgepole has, for centuries uncalculated, been springing up wherever there was a foothold throughout vast areas in the northwestern states, western Canada and regions of Alaska. Distinguished by its long, tapering and symmetrical trunk, it is sometimes known as the jack pine or black pine. Whatever the designation, there has always been a good deal of superior sniffing when it was mentioned.

Other trees such as the ponderosa pine and mighty Douglasfir, were bigger and more handsome. Lumbermen "couldn't bother" with the smaller lodgepole. Foresters described them as "unhandy to log" and "hard to run through the mill."

A forester with a different view is V. L. Collins, district forest ranger at Colville, Washington, who is responsible for much of the "modern" information about lodgepole pine.

"A prolific reproducer," reports Collins, "it persistently perpetuates itself throughout great areas made temporarily untenable, by the forces of nature or the heedlessness of man, to the more permanent, longer-lived trees. Ordinarily growing most thriftily in the lighter soils and cooler atmosphere at four to six thousand feet elevation, it also invades the warmer humid lower valleys and often defies the wrath of the elements at near timberline."

Plainly a breed not easily discouraged, the lodgepoles thrust up dense stands of tall straight trunks in a manner often referred to as "dog hair reproduction."

In many instances the lodgepole is the first tree to reproduce itself from seed on recently burned-over areas. Instead of getting credit for this, the slender beauty, which is only trying to be helpful, has been clapped into the "weed" classification, along with brambles and dandelions.

The Indians, who didn't have to worry about getting the proper cuts out of a sawlog, of course knew better. The Blackfeet and Sioux used

the slender saplings for poles for their lodges, and were grateful instead of abusive.

Montana ranchers also found them valuable. Cattlemen, Collins asserts, "will go forty miles" to get small lodgepoles with which to make corral poles.

Enterprising innovators have found other uses for the lodgepole. It makes good shakes and logs for cabins, and, when properly sawed, good flooring. As fuelwood it is hard to beat.

One of its primary contributions, while sprouting with dispatch over entire counties, has been passive. But for its presence there would be nothing but great areas of unprotected, unproductive, eroding earth. It holds the snow in winter, provides shelter for game and birds, and serves to break the wind.

Mysteriously and open-handedly, it his distributed its seed over mile after mile of the great burns of 1889, 1910, 1919, 1926, 1929, 1931 and 1934, covering the burned-over earth and protecting it as a nurse crop for the cedar, fir, white pine, larch and others to follow.

Still, people kept asking, what the dickens could be done with it? The lodgepole had no answer of its own for that. It kept on behaving in the same lavish way, coming up like bristles on a hair brush, lengthening out into a lean winsome shape as it fought with deceptive spirit for light and root space.

Back in the days when railroad ties were hewn by hand, the lodgepole was the subject of revived attention. Its size was convenient for the sort of work that needed to be done. Then someone came along with a saw. It was discovered that larger species, operated on with the instrument, would yield ten times as many ties, in half the time. Workers dropped their adzes. Loggers kicked the lodgepole, just out of habit, and went away.

In the 1920's the Anaconda Copper Company in Montana got to buying lodgepoles for mine timbers. Owners were picking up $200 an acre, which was a very fancy price in those days. The only thing that kept the lodgepole from becoming famous then was that there wasn't enough Anaconda, and not enough mines like it. So the lodgepole sighed and "moseyed" back into its chimney corner.

Meanwhile, the cedar was dancing every dance, and getting proposals right and left. The cedar let it be understood that it was pledged, so far as the telephone pole market was concerned, and there had better be no sheep's eyes cast at its betrothed. Cinderella lodgepole, however, has refused to take orders from anyone. Cedar stands were getting thinner and more remote from the market—while the demand for poles was galloping far ahead of the available supply.

In prewar years, the biggest users of poles, the telephone and power companies, required three million yearly. Extension of facilities was delayed during the war years, and their needs now have advanced to five million. In addition, the Rural Electrification Administration has launched a tremendous program which calls, on paper, for thirty million poles within the next five years.

All of which means that the yearly call has "jackrabbited" from a comfortable three million to a colossal eleven million. Bottleneck in their production is expected to be the creosote treating plants, but the demand is there.

The southern pine forests have in the past supplied approximately two-thirds of the nation's pole demands, with cedar accounting for the bulk of the remainder. While the lodgepole is not expected to make serious inroads in the southern pine market, it still has a field of well above a million poles a year to work on.

Homer S. Sackett, president of the Wood Products Company, of Portland, one of the largest pole-producing concerns in the Pacific Northwest, estimates that more than a third of his 150 thousand poles used in 1947 will come from the lodgepole pine.

Experiments have indicated that the lodgepole will take the creosote treatment very easily, perhaps better than its competitors, and there is a growing clamor for trainloads of them.

It wasn't so long ago that no one would have accepted a lodgepole pine as a gift, even if there had been a ten-dollar bill wedged in the bark. Yet since December 1946, the Colville National Forest, Collins reports, has sold between 50,000 and 60,000 lodgepole pine poles. The species is commanding a price which ranks it with cedar and white pine.

National forest timber cruisers have traveled hundreds of miles with their instruments and tally sheets, sometimes on snowshoes, tabulating the lodgepole stands. E. H. MacDaniels, veteran Pacific Northwest forester, explains it this way: "Nobody ever cared enough about them before to figure out how much of the stuff there is."

Ingenious peeling devices have been installed in connection with some of the creosote treating plants. These strip off the bark and most irregularities, and to a certain extent true up the pole.

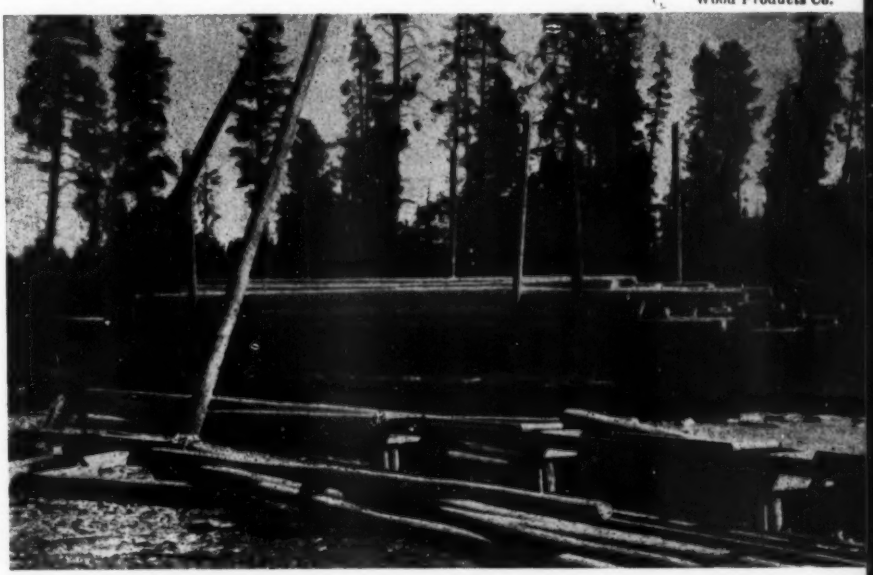
Most in demand at the present are poles from thirty to thirty-five feet in length, but poles of all sizes are being taken out of the woods.

Alive to the market are numerous private owners as well as the Lewis

(*Turn to page* 43)

Choice lodegpole pines in process of being loaded at La Pine, Oregon. They are creosoted prior to their use as power or telephone poles

Wood Products Co.



FOREST RESOURCES OF MINNESOTA

By J. A. DONERY

THE cutting of timber for commercial production of lumber in Minnesota dates back to about 1835, when operations started in the St. Croix Valley adjacent to the west boundary of Wisconsin. The peak of lumber production was reached in 1899, by which time the white pine forests had been greatly reduced, although the state then ranked third among all the states as a producer of lumber. From 1899 lumber output dropped rapidly; the state ranked twelfth in 1910, sixteenth in 1919, and in 1942 twenty-seventh, with a cut of 232 million board feet, of which only 139 million feet consisted of white, red and jack pines.

Forest area has been reduced from approximately 32,000,000 acres to less than 20,000,000 acres, while the original stand of upwards of 100 billion board feet of sawtimber now totals less than 12 billion. Further, of the 19,700,000 acres of commercial forest land in the state, approximately 3,000,000 acres have been withdrawn from timber use or are chiefly valuable for purposes other than timber production. Thus there is left today but 16,700,000 acres of commercial forest land.

The condition of Minnesota woodlands may be summarized as follows: nearly 5,000,000 acres poorly stocked or denuded; 7,200,000 acres of seedling and sapling growth, at least 40 percent stocked; pole timber occupies 2,900,000 acres, and 1,600,000 acres remains under sawtimber. Sawtimber stands are those having stands of 2,000 board feet or more of sawtimber size on each acre, while pole timber has less of larger material and at least three cords of smaller wood on each acre. The volumes are expressed in board feet, International Rule, and in standard cords with bark included.

Federal lands account for 2,560,000 acres of Minnesota woodlands, all but 60,000 acres being in national forests, and only 375,000 acres being classed as non-commercial. Indian reservations contain 600,000 acres, of which 115,000 acres are classed as non-commercial. The state owns 4,100,000 acres, of which 3,300,000 acres are commercial, and counties and municipalities have 4,300,000 acres, which includes no less than 3,800,000 acres of commercial woodland. Obviously, state timberland acquisition has come about largely through forfeiture by private owners of cutover lands for taxes. Still, there remain more than 8,000,000 acres in such private ownership; 5,383,000 acres being in farm wood-

Pulpwood in the harbor of Grand Marais — jack pine and aspen forest in background

U. S. Forest Service

lands and 2,757,000 in industrial properties. Only 157,000 acres of industrial forests are non-commercial, while 1,053,000 farm woodland acres are in similar category.

The volume of sawtimber remaining is set forth in Table 1 below, at right. Approximately 96 percent of the softwoods, 67 percent of the hardwoods, and 80 percent of the total sawtimber volume on commercial forest lands is found in the northern half of the state.

The volume of pulpwood (in cords with bark on) in trees five to nine inches in diameter breast height, upon commercial forest lands is estimated as follows: jack pine, 3,150,000 cords; spruce, 4,400,000 cords; balsam fir, 3,660,000 cords; aspen, 7,000,000 cords. The volume of material other than pulpwood, in small sound trees and in tops of softwood trees, plus the material in cull trees and in hardwood tops and limbs, is estimated to total 49,990,000 cords, with bark. Of this slightly less than 10 percent is known to be growing softwoods.

Forest fires have been a big factor in the reduction of forests, particularly in the destruction of the old-growth pine stands. Disastrous fires occurred in 1871, 1881, 1894, 1908, 1910, and 1918. The loss of human lives in these and other years has been very large, while the waste of timber and the loss of other property must have been enormous, although definite figures never have been compiled for the long period since logging began.

The results of forest fires, and of clear-cutting practices of the early days, are reflected in the present condition of Minnesota's forests. Except for areas of hardwoods found in farm woodlots in the southern part of the state, tree growth on most lands consists of aspen, jack pine, paper birch and balsam fir reproduction up to saplings and poles, and of swamp areas supporting black spruce suitable usually for pulpwood. Remnants of old growth white pine, and "Norway" pine stands are found in the state parks, in the Red Lake Indian Reservation, and in the national forests, but not elsewhere. Eventually most of this will disappear, except possibly in the state parks.

At present the entire timbered area of the state is being protected from fire by the Division of Forestry, Minnesota Department of Conservation, the Indian Service and the U. S. Forest Service. The last named agency protects the national forests and intermingled lands; the Indian Serv-

Dense stand of 40-year-old aspen in northeastern Minnesota

TABLE 1. REMAINING SAWTIMBER VOLUME
In Board Feet

Species	Northern Half	Southern Half	Entire State
White Pine	782,000,000	58,000,000	840,000,000
Red Pine	481,000,000	49,000,000	530,000,000
Jack Pine	1,726,000,000	54,000,000	1,780,000,000
Balsam Fir	319,000,000	11,000,000	330,000,000
White Spruce	348,000,000	2,000,000	350,000,000
Black Spruce	977,000,000	33,000,000	1,010,000,000
Tamarack	87,000,000	13,000,000	100,000,000
Total Softwoods	4,720,000,000	220,000,000	4,940,000,000
Sugar Maple	117,000,000	203,000,000	320,000,000
Yellow Birch	89,000,000	1,000,000	90,000,000
Basswood	181,000,000	309,000,000	490,000,000
Red Maple	21,000,000	59,000,000	80,000,000
Paper Birch	630,000,000	40,000,000	670,000,000
Oaks	102,000,000	568,000,000	670,000,000
Elm	259,000,000	441,000,000	700,000,000
Aspen & Cottonwood	2,892,000,000	358,000,000	3,250,000,000
Other Hardwoods	209,000,000	171,000,000	380,000,000
Total Hardwoods	4,500,000,000	2,150,000,000	6,650,000,000
Total All Species	9,220,000,000	2,370,000,000	11,590,000,000

TABLE 2. LUMBER CUT
In Thousands of Board Feet

Species	1939	1940	1941	1942	1943	1944*	1945*
Pine	61,474	79,863	114,744	129,587	120,801	133,400	135,300
Spruce	2,175	3,378	2,913	3,088	1,778	2,400	2,900
Balsam Fir	1,760	2,711	2,049	2,003	1,136	1,200	1,400
All Other	3,921	6,483	3,621	4,435	2,174	4,700	3,900
Total Softwoods	69,330	92,435	123,327	139,113	125,889	141,700	143,500
Maple	821	392	614	1,029	517	1,700	800
Birch	3,017	5,299	6,376	5,675	1,950	3,600	1,600
Basswood	2,898	3,433	3,632	6,351	4,433	6,400	6,100
Elm	3,003	4,535	4,529	6,364	3,717	5,800	8,200
Oak	2,049	8,855	8,010	9,987	7,851	16,100	14,200
Aspen	28,755	31,270	45,754	60,809	48,413	64,100	55,900
Other	1,345	1,140	1,799	2,483	2,888	2,700	3,400
Total Hardwoods	41,888	54,924	70,714	92,698	69,769	100,400	90,200
Total All Species	111,218	147,359	194,041	231,811	195,658	242,100	233,700

*Unofficial estimates by U. S. Forest Service and the author.

ice protects the reservations, while the state covers private and state woodlands.

For the entire state, the records of the U. S. Forest Service show that from 1936 to 1940 an average of 1,519 fires burned over 147,000 acres annually, or 735,000 acres for the five-year period. However, since this figure includes large areas of non-forest land and denuded forest, also areas where fires have occurred year after year, the actual acreage of reproduction and of merchantable timber destroyed or seriously damaged probably does not exceed one-third of that reported as burned over.

Average annual losses from insects and disease are estimated to be five percent of the total drain from all causes, which is not alarming. Yet heavy losses of tamarack, jack pine, balsam fir and spruce have occurred during the past 40 years from such causes, and similar attacks may be expected again. White pine blister rust has caused considerable damage to young stands of white pine, and the work which has been carried on cooperatively by the state and federal government should be expanded to make control really effective on a wide front.

In Minnesota, as in most other states, loggers have followed the practice of removing as much of the usable material from the woods as economic conditions would permit. The result is that cutover lands as a rule support few merchantable trees which would provide a basis for a second cut. This was highlighted during the war period; in fact, the extraordinary demand has encouraged the cutting of smaller and defective trees, so that fewer remain than in former years. At the same time, it is possible to remove and use more defective material from the trees which have been felled, and that is an advantage.

Demand for timber for national defense purposes resulted in an increased cut of practically all products, particularly of sawed shapes and of pulpwood. The amount of lumber and other sawed products cut during the years 1939 to 1945, inclusive, is shown in Table No. 2 on page 27.

Output of sawed products for the years 1935 to 1938, inclusive, as reported by the Census Bureau, amounted to 304,512,000 board feet of softwoods and 145,266,000 feet of hardwoods, or a total of 449,512,000 board feet. The total for the period 1935 to 1944, inclusive, is 996,040,000 board feet of softwoods and 575,660,000 feet of hardwoods, or 1,571,700,000 board feet altogether—an average of 157,170,000 board feet each year.

The yearly drain from all causes is estimated at 360,000,000 board feet of sawtimber (202,000,000 feet of softwoods) and 1,230,000 cords of smaller wood (585,000 cords softwood). The total of all such drains runs to 175,000,000 cubic feet. Aside from lumber, sawtimber goes into pulpwood, mine timbers, fuelwood, veneer logs and various other minor uses, while about one half of the cordwood is used for fuel, a third for pulp, and most of the remainder for lumber, fence posts, mine timbers and veneers.

Current annual growth on all commercial forest land, based on the estimated annual growth during the period 1935 to 1944, inclusive, is believed to be 419,900,000 board feet of sawtimber (176,400,000 feet of softwoods), and 2,514,700 cords of smaller wood (713,300 cords of softwoods). While 42 percent of the average annual growth of sawtimber occurred on the softwoods, the average drain of these species exceeded yearly growth by 25,600,000 board feet. Consequently, the net yearly increase of 60,000,000 board feet of sawtimber occurred on the hardwoods, of which approximately 50 percent are aspen and cottonwood, low value species.

The average annual growth of material reported in cords exceeded drain by 1,284,700 cords. The increase in softwoods was 128,300 cords and in hardwoods 1,156,400 cords, this latter being largely aspen. It is evident that, as a whole, timber in Minnesota is growing considerably faster than it is being removed, yet the quality of remaining timber is deteriorating because of the removal of larger trees and the more valuable species. And much of what remains is located in hard-to-reach places.

Continued protection from fires, plus large-scale planting, will assure wood in ample supplies for all industries in the state except lumber manufacture. In 1943, the lumber cut amounted to about 200 million board feet, but 700 million feet were imported for local use. It will be a long time before the lumber budget will be balanced. Yet there are ways in which the situation can be improved—and rapidly.

On the assumption that the total volume of pulpwood and other cordwood follows the same ownership pattern as sawtimber, 45 percent of Minnesota timber is in private ownership and 55 percent is publicly held or managed. Since 26 percent of the timbered area (same percent of timber) is in farm woodlands held by a large number of owners, and 55 percent is publicly owned or managed, only 15 percent of the timbered land and 19 percent of the timber is held by industrial or owners other than farmers.

With the bulk of the timbered land in small holdings, responsibility for restoring the forests rests largely with the public agencies through (1) their management of public lands, and (2)

(*Turn to page* 44)

Large sections in northern Minnesota should be restocked. The burned-over Norway pine area shown below is a typical example

TWENTY YEARS OF PLYWOOD

Phenomenal growth of the plywood industry in twenty years is attributed in large measure to its versatility, its strength in proportion to its weight and its relative freedom from warping

By A. D. McKELLAR

Plywood manufacture has grown in twenty years to one of the major wood industries. Production of softwood plywood increased from 153 million square feet (three-eighths of an inch in thickness) in 1925 to a record output of 1,840 million square feet in 1942. Hardwood plywood production in 1944 was 1,166 million square feet, compared with 782 million square feet in 1939. Added capacity of plants now under construction, or proposed, indicates that production of softwood plywood may top the two billion square feet mark in the next few years and that of hardwood plywood may top one and a half billion square feet.

This phenomenal growth is attributable to plywood's versatility, its strength in proportion to weight and its relative freedom from shrinking and warping. The large sizes in which structural plywood is available reduce the labor and cost involved in its application. The variety of grain pattern which can be achieved by matching veneer in hardwood plywood makes it particularly desirable for interior finish and furniture.

New machinery and processes have contributed to economy of production and quality of plywood. Of paramount importance is the use of synthetic resin adhesives, introduced about 1935. These adhesives—phenol formaldehyde, urea formaldehyde, resorcinol, poly-vinyl, and others—are superior, for many purposes, to casein, soybean, animal, and other glues. They make possible a waterproof bond between the veneer plies, and may be used to form a surface coating resistant to abrasion, acids and stains. About one-third of the softwood plywood is bonded with synthetic resins; these are also extensively used in hardwood plywood.

Scarf-jointing permits the manufacture of plywood of any desired dimension. Panels more than fifty feet long have been built up for special purposes. Machines developed for automatically removing defects and inserting patches, result in the saving of material and improvement of grades. Edge-gluing equipment produces perfectly matched joints and eliminates much of the hand labor formerly required in taping face veneers before laying-up the plywood assembly. Techniques for molding plywood into simple or complex curves made a very significant contribution during the war in providing shaped components for aircraft. The flexibility of thin sheets of veneer allows them to be laid in, or around, dies or forms, against which the sheets are pressed until the glue sets.

An outstanding recent development is the application of dielectric heat in the setting of adhesives. The veneer assembly is compressed between two electrodes and subjected to a radio frequency current, which causes accelerated molecular motion within the wood. This raises the temperature and causes the glue to set. The method saves time, which may be reduced in some instances from several hours to a few minutes. A further advantage is the uniformity of the heat generated in the wood and glue line; areas of uncured glue are largely eliminated. The techniques and possibilities of applying dielectric heat have been only partially explored but the process is expected to become standard for many purposes. It is not yet economically applicable for producing utility or commercial grades of plywood.

The extensive use of plywood for construction is well known. Originally, it was employed primarily as a covering for interior walls and sheathing. The development of exterior-type plywood now permits its use on the outer, weather-exposed surfaces. In recent years the "stressed-skin" principle has been used in plywood construction. By this is meant that the plywood forms an integral part of the load-bearing members, thereby reducing the quantity of wood or other material required for framework. This principle is especially adapted to prefabricated structures.

Prefabrication on a mass-production basis has been made possible largely by the economies of plywood use. Large panels facilitate production, and light weight in relation to cubic volume reduces the cost of transportation. Practically all prefabricated buildings contain plywood, and in some types it constitutes the major part of the structure. Prefabrication is applicable not alone to houses. Farm buildings—barns, silos, chicken houses, coops, and kennels—offer a rapidly expanding field. A farmer can now provide his pigs with a scientifically designed, prefabricated plywood house selected from stocks of his local merchant.

The use of plywood for subflooring and concrete forms has increased rapidly. Plywood presents a smooth surface. Its chief advantages are claimed to be the ease of laying and the reduction of "creeping," caused by expansion and contraction. It is particularly adaptable for concrete forms because of the rapidity with which the retaining wall can be erected and the smooth concrete surface which results. Modern architectural designs frequently call for large concrete surfaces free from seam marks and blemishes. The requirements for some industrial structures are similarly exacting, for example, the interior walls of mixing bins in flour mills. Plywood produces a maximum of defect-free surface, consistent with reasonable cost. With care in handling, it can be used many times.

Plywood is a basic material in the construction of most automobile trailer coaches.

Plywood boxes have been used for many years. The suitability of this type of box was demonstrated most effectively during the war. Export packages, subjected to extremes of heat and cold, submergence in salt water, rough handling, and other severe conditions, demanded strong

(*Turn to page* 39)

KNOWING YOUR TREES

FRASER BALSAM FIR

Abies fraseri, (Pursh) Poiret

By WARREN D. BRUSH

FRASER balsam fir is found only on the highest peaks of the Alleghany Mountains at altitudes of from 4,000 to 6,000 feet from southwestern Virginia to western North Carolina and eastern Tennessee, clothing their dry summits with forests of considerable extent. It is found in pure stands and also in company with red spruce, mountain-ash and yellow birch. Its occurrence in dry localities is in contrast with the more northerly balsam fir (*Abies balsamea*) which perfers moist locations. The name southern balsam fir is sometimes applied to this species and it is commonly called "she balsam" locally by the mountaineers in distinction from the red spruce or "he balsam."

Growing to a usual height of 30 to 40 feet, the tree sometimes attains 70 feet with a trunk diameter of from one to two and a half feet. In isolated locations the rather rigid branches form an open symmetrical pyramid with whorls of long, horizontal, lower branches, those above successively shorter to the pointed apex. When crowded by other trees, the lower branches generally disappear at an early age from the lower part of the trunk. The stout branchlets are densely covered with short reddish hairs for three or four years. They are pale yellow-brown during their first season, becoming dark reddish brown often tinged with purple. The small, obtusely pointed, orange-brown winter buds are very resinous.

The flat, stemless leaves are one-half to nearly one inch long and about one-sixteenth of an inch wide. They are obtusely short-pointed or occasionally slightly emarginate at the apex and, spreading upward and forward, they are crowded on the upper side of the twig. Dark green, lustrous and centrally grooved above, they are silvery white beneath, with eight to twelve rows of stomata.

In May, male and female flowers appear separately on the same tree, the staminate very abundant on the lower side of the branches above the middle of the tree and the pistillate usually on the upper side only of the topmost branches. The staminate are yellow tinged with red and the pistillate purple with scales much broader than long and shorter than their oblong, pale yellow-green bracts which are rounded at the broad apex and terminate in a slender, elongated tip.

The oblong-ovate or nearly oval cones mature in September. They are rounded at the somewhat narrowed apex, about two and a half inches long and one and an eighth inches thick. The cones differ from those of balsam fir (*Abies balsamea*) in that the scales, which are twice as wide as long, are nearly half covered at maturity by their much longer reflexed bracts which are oblong, rounded, and short-pointed at the wide denticulate apex.

J. Horace McFarland Co.

Generally 30 to 40 feet tall, Fraser Balsam Fir grows in pure stands and also with red spruce, mountain ash and yellow birch. It often resembles an open symmetrical pyramid

The bark of young trunks has numerous resin blisters. On the trunks of older trees it is from one-fourth to one-half inches thick and is covered with thin, closely appressed bright cinnamon-red scales, generally becoming gray on old trees.

The light, soft wood is low in strength properties and in resistance to decay. The pale brown heartwood is surrounded by nearly white sapwood. Because of its inaccessibility, the wood is little used although it is valuable for the same purpose as the balsam fir. It has been occasionally manufactured into lumber for the construction of hotels and other buildings at high elevations on the mountains of North Carolina and Tennessee, but little of it enters commerce. Like the balsam fir, Fraser balsam fir is very desirable as a Christmas tree, not only because of its symmetrical form but also because the needles remain on the twigs for a comparatively long time after the tree is cut. The branches are much used for making balsam pillows.

Fraser balsam fir is occasionally planted in the parks and gardens of the northeastern states and of Europe. It is hardy as far north as southern Ontario and New England but is short-lived and not very satisfactory under cultivation.

Reproduction is most frequent in moist, humid soils. It is not satisfactory on burned-over areas where the humus has been removed. Lumbering and pulpwood operations in the southern Appalachians, frequently followed by fires have greatly reduced the timber-producing areas of this species. Forest land acquired by the United States government in this region embraces large areas where the tree grows naturally and protection from destructive cutting operations will insure future stands. In its natural habitat near the summits and on elevated slopes of the southern Appalachians conditions are unfavorable for destructive forest fires. There is frequent and abundant rain and the forest shade usually keeps the ground too moist for fire. When severe damage is done by fire, however, a second stand of timber is unlikely because of the inability of the tree to seed itself on tracts that have been severely burned.

Fraser balsam fir grows quite rapidly in youth but more slowly as it becomes older. When young it will grow in the shade of other trees, but later it requires full light for its best development.

Fraser Balsam Fir is found only on the highest peaks of the Alleghany mountains at altitudes of from 4,000 to 6,000 feet

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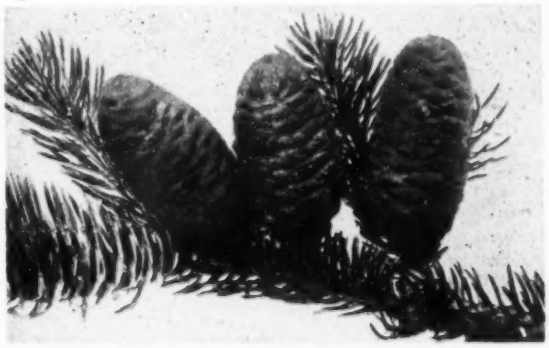
The flat, stemless leaves are dark green and centrally grooved above and silvery white beneath with 8 to 12 rows of stomata



The nearly oval cones, which mature in September, are about two and a half inches long and one and one eighth inches thick

The bark of older trees is covered with thin, closely appressed bright cinnamon-red scales, generally becoming gray in old trees

managing your WOODLANDS

A page dedicated to the management of woodlands, large and small — practical suggestions in procedure and technique and in the solution of problems on the ground.

What is your problem? American Forests will assist you in finding an answer. Address queries to The Woodlands Editor.

IT PAYS TO DO THE WORK YOURSELF

As this Montana farmer will tell you, the profit comes from obtaining the technical know-how—and applying it

THE Stillwater River, down which thousands of logs have floated from the forest to the mill, flows through John Horn's farm in Montana. As a landowner and timber operator, however, Horn is one of the small fry—one of the four million owners of small forest properties. He and his timber operations are important in the national scene only as examples of what millions of others could be doing to increase their own economic stature as well as that of the nation.

Farmer Horn has 330 acres of woodland on his 520-acre farm. He plans to reduce this by about seventy acres within the next decade in order to round out his farm-woodland enterprise. His crops are grain, hay, livestock and timber. From these, by good management, he is able to provide himself and his family with year-round employment and income.

When first cut over years ago, the 520 acres yielded over a million board feet of timber, hundreds of cords of fuelwood and innumerable fence posts. Horn is now harvesting a second crop, but this will be a continuing one with no decades of waiting between successive harvests. For he is approaching his timber operations with a view to permanency and is utilizing the best methods at his command to perpetuate growth on his land.

Before starting his operations in 1947, Horn sought the help of the local farm forester, William L. Royer, who assisted and trained him in marking and scaling timber. But Royer's advice went beyond this. He emphasized the extra money to be made by Horn if he cut the trees himself and skidded them to the road. He demonstrated how low stumps increased the volume of wood for the market and how close utilization in the tops of felled trees provided pulpwood, fence posts and fuel. All of which meant greater profit.

This meant more work for Farmer Horn, but it was work that paid well. His initial 1947 cut had a stumpage value of $246, but the product of his labor in getting it out was $410—a total of $676 instead of the $246 he would have received had he sold the timber on the stump. In addition, he was able to market $90 worth of pulpwood from the tops and had fuelwood for his own use or for sale at a market value of $75.

Douglasfir grows thickly on Horn's woodland—too thick, in fact, for its own good. If permitted to crowd naturally, its growth would soon slow down to a non-paying basis. Consequently, his management plans call for thinning his young Douglasfir stands. Last spring Horn combined a thinning operation with the filling of an order for 150 Douglasfir piling. This netted him a profit of $125 and 2,500 feet of sawtimber, in addition to ten cords of fuelwood. More than that, he was able to obtain from the thinning about 600 small logs which he needed to build a shed.

His woodland has not suffered from these cuttings. On the contrary, it is in better growing condition, for the trees having been cut with a view to increasing the growth of the remaining stand. His current standing

(*Turn to page* 44)

William L. Royer, farm forester, shows John Horn how to measure the volume of his logs for local markets

Sawlogs, poles, Christmas trees and fuelwood are recurring crops along with grain, hay and livestock

Photos by K. D. Swan, U. S. Forest Service

Arching 9,000 board feet in one load demonstrates the lugging ability of the International TD-24 Diesel Crawler. Over rugged terrain and across soft spots, this new giant tractor proves its ability in a show near Mount St. Helens and Cougar, Washington.

To speed up selective as well as clear-cut logging in the Pacific Northwest, International Harvester now provides a new and versatile giant of power and pull—the International TD-24 Diesel Crawler.

This great tractor is powered by an engine that develops 180 horsepower at the flywheel. It offers loggers many new advantages, such as finger-tip control, planet-power steering, 8 speeds forward and 8 reverse, shift-on-the-go transmission and unexcelled lugging ability.

And because the TD-24 is well balanced and powerful it can reach up into the rough terrain of the mountains and bring out the monarchs of the forest that are ripe for felling. This means more economical logging of hard-to-reach timber which is needed now.

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NEWS IN REVIEW

OPERATIONS to salvage 8,000,000 board feet of sawtimber and 6,000 cords of pulpwood left in the wake of forest fires which last October swept over the federally-owned Massabesic Experimental Forest near Alfred, Maine, are under way. The value of the stumpage killed by fire, exclusive of research installations, is put at $100,000. Salvage operations must be completed before July when insect and fungus attacks can be expected to make the wood unfit for commercial use. All but 560 of the forest's 3,700 acres was burned over.

A similar salvage program is developing for the approximately 250 thousand acres of October burn in the rest of the state. Federal and state officers and industry are cooperating in a plan for harvesting the fire killed or damaged timber. Governor Horace A. Hildreth has appointed a committee of citizens, to serve without compensation, to direct operations.

Massachusetts came through the fall fire season with 160 fires on 15,000 acres—less than half of one percent of the state's forested area. One life was lost and thirty buildings were burned. While conditions were not so bad as those in Maine, over 100 fires were ablaze on October 23, any of which might have become a major catastrophe if it were not for prompt and efficient action of the Division of Forestry, other conservation agencies, town wardens and volunteers. As in Maine, help came from every conceivable source.

State Forester Eric Jacobson of Rhode Island reports that his state lived through the October season with fire losses at only 600 acres. Here again, the drought and wind conditions were not quite as bad as those in Maine.

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Don P. Johnston of Wake Forest, North Carolina, a director of The American Forestry Association, has been elected president of the North Carolina Forestry Association, succeeding Dr. Clarence F. Korstian, dean of the Duke University school of forestry. Vice-presidents are W. H. Keener of Canton, John W. Clark of Greensboro, and Thomas Pearsall of Battleboro. Mrs. W. D. Sabiston of Carthage, was reelected secretary-treasurer and E. D. Fowler of Durham was named editor of the group's publication, *Forest Notes*.

• • • •

John F. Shanklin has been named director of forests, responsible for the coordination of all forestry work on the 190 million acres of forest and woodland in the continental United States, Alaska and Hawaii under the jurisdiction of the Department of the Interior.

A graduate of the New York State College of Forestry at Syracuse University, Mr. Shanklin was engaged in wood utilization work in private industry from 1924 until he entered the National Park Service in 1933. During the war he served as a special assistant in charge of the department's emergency forest and range activities. Since 1944 he had been assistant director of forests.

The office of Director of Forests is one of three branches in the Office of Land Utilization, the other two being the Branch of Lands, which is concerned with developing policies as to the retention and disposal of federally-owned lands, and the Branch of Soil Conservation and Range Management which develops regulations and policies relating to range management and soil and moisture conservation operations throughout the department.

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Sydney Ferguson, president of the Mead Corporation, New York, was elected president of the American Forest Products Industries, Inc., on November 20, succeeding Corydon Wagner, vice-president of the St. Paul and Tacoma Lumber Company, Tacoma, Washington. The tree farm movement sponsored by AFPI has been extended to twenty-one states. The total number of classified forest holdings is 1,295, embracing 14,601,744 acres. The largest number is in the South, with 1,059 tree farms on over nine million acres.

Don P. Johnston—new president of N. C. Forestry Association

John F. Shanklin—director of forests for Interior Department

Sydney Ferguson—head of Mead Corp., named AFPI president

More than 2,300 people, representing the state's 159 counties, heard Georgia's Governor Melvin E. Thompson launch the "Keep Green" campaign at a meeting in Atlanta in November. The governor also announced the allocation of $45,000 to the state forestry department for extending intensive organized forest fire protection to twelve additional forested counties. The Georgia Forestry Association has accepted responsibility for organizing the Keep Green movement in the state.

• • • •

New president of the Society of American Foresters is Clyde S. Martin, chief forester for the Western

Clyde S. Martin—Society of American Foresters' new president

Pine Association. He succeeds Shirley W. Allen, professor of forestry at the University of Michigan. Martin is the first industrial forester to head the professional society.

Charles F. Evans, regional forester, U. S. Forest Service, Atlanta, Georgia, succeeds Martin as vice president.

Members of the society's council are Willis M. Baker of the Tennessee Valley Authority; Paul M. Dunn of Oregon State College; James C. Evenden of the U. S. Bureau of Entomology and Plant Quarantine, Idaho; Charles H. Flory, state forester of South Carolina; William B. Greeley of the West Coast Lumbermen's Association; Clarence S. Herr of the Brown Company, New Hampshire; R. E. McArdle, assistant chief, U. S. Foreset Service, Washington, D. C.; DeWitt Nelson, state forester of California; and John W. Spencer, regional forester, U. S. Forest Service, Colorado.

The following men were elected

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Fellows, the highest honor the society confers upon its members: Shirley A. Allen; Hugh P. Baker of Massachusetts; Tom Gill of Washington, D. C.; D. S. Jeffers of Idaho; W. C. Lowdermilk of California; R. E. Marsh of Washington, D. C.; Clyde S. Martin of Washington; David T. Mason of Oregon; John F. Preston of Maryland; S. B. Show of Washington, D. C.; and George H. Wirt of Pennsylvania.

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Officers of the newly-formed Louisiana Forestry Association are: Quintin T. Hardtner, president, Urania Lumber Company, G. L. Paret of Lake Charles, vice-president, and Lloyd P. Blackwell of Louisiana Polytechnic Institute, acting secretary.

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The American Association of Nurserymen, Washington, D. C., is undertaking the registration of new varieties of woody plants, exclusive of fruits, nuts and roses. New listings will be released to the press and printed annually. Registration cards are available on request.

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Bill Scott, Forest Ranger (see "Ranger Bill in New York," February 1947, issue), was one of four series of radio broadcasts to receive special citations from the School Broadcast Conference in Chicago in October. The other three to receive this top honor were professional series. The conference hailed the program as "a significant contribution in the field of conservation and decidedly a genuine public service indicative of what other such school-producing groups can aspire to." The popular series, now on recordings, is used in more than thirty states.

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Ernest F. Swift has been named director of the Wisconsin Department of Conservation, succeeding E. J. Vanderwall who recently resigned. Mr. Swift first entered the department in 1926 as a conservation warden, later advancing to district forest ranger and superintendent of fur farms. In 1935 he was appointed deputy director. Since 1942, he has been assistant director in charge of forestry activities, including the protection of thirteen million acres of forest land under state jurisdiction and eight million administered in cooperation with the counties.

In an editorial paying tribute to the new director, the Sheboygan, Wisconsin, *Press*, says, "No one can question the ability of Mr. Swift, and coming up through the ranks he knows the system thoroughly. The commission acted unanimously in the matter of his appointment and for several months had been canvassing the field and no one measured up with greater ability or with a better understanding of conservation than Mr. Swift. Conservation organizations throughout the state were favorable to his appointment and this in itself is assurance that in his new field he will have the support of the masses."

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Time to qualify for bidding and the auction date for the sale of one and a half billion feet of national forest pulp timber near Ketchikan, Alaska have been extended. Persons who wish to qualify for bidding may submit statements to Lyle F. Watts, chief of the U. S. Forest Service, by March 1. The oral auction will be held in Washington, D. C., April 14.

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Three million pine seedlings will be planted on South Carolina and Texas holdings of the Champion Paper and Fibre Company this winter as the first step in the company's expanded reforestation program.

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Texas has paved the way for more assistance to small timberland owners by authorizing the Texas A & M College to accept funds from counties, towns, corporations, groups or individuals for use by the Texas Forest Service in employing management foresters. Demand for services of two project foresters now employed, partly from federal funds, is too great for them to handle.

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Kennesaw Mountain battlefield, near Marietta, Georgia, has been established as a national battlefield park under the administration of the National Park Service. The new park, which contains 3,094 acres had been in the "project" stage for the past twelve years.

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Because of the European timber crisis and its effect in reducing food production in Europe, the Food and Agriculture Organization of the United Nations has set up a European forestry office at Geneva, Switzerland. D. Roy Cameron, former dominion forester of Canada, will be in charge. The office will advise international bodies which are trying to increase the timber supply, improve the distribution of timber products and decrease their waste.

A western lumberman, A. J. Glasgow, of Bend, Oregon, was elected president of the National Lumber Manufacturers Association at its 45th annual meeting in November. Mr. Glasgow, who succeeds C. Arthur Bruce, Memphis, Tennessee, is vice-president and general manager of Brooks, Scanlon, Inc., Bend, Oregon.

The NLMA staff was directed to make plans for another American Lumber Congress in 1949.

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Mississippi is preventing fire with fire. Six firelane burners are at work destroying inflammable material in lanes eight feet wide along roads through the state's forested areas.

• • • •

Eight members of the U. S. Forest Service were among 174 employees of the Department of Agriculture recently given honor awards by Secretary Clinton P. Anderson.

Superior awards for unusually efficient and effective performance of official duties were made to the following: James R. Bruckert, for work in the advancement of forestry in the Willamette Valley, Oregon; Porter C. Burris, for development of equipment for fire control; Theodore P. Flynn, for developing new and specialized mechanical equipment for forestry work; Harry T. Gisborne, for pioneering and accomplishment in fire control research; F. Lee Kirby, for promoting the conservation of range, water and other natural resources; Theodore W. Norcross, for initiative and leadership in engineering; and Russell R. Reynolds, for research on applied forest management on the Crossett Experimental Forest.

The distinguished award for heroism was made to Lewis B. Holt, a camp foreman of Orfino, Idaho, who saved the life of a fellow worker.

Meetings You Should Attend

January 11, 12, 13—Southwide Conservation Conference; Southern Association of Science and Industry—Hotel Murphy, Richmond, Virginia.

February 12 to 14—Association of Southern Agricultural Workers—Washington, D. C.

February 14 to 22—Detroit Sports Show; Michigan United Conservation Clubs—Convention Hall, Detroit, Michigan.

February 18, 19—Southern Forestry Conference; Forest Farmers Association—Hotel Heidelberg, Jackson, Mississippi.

February 27-March 7—International Sports, Travel and Boat Show—Navy Pier, Chicago, Illinois.

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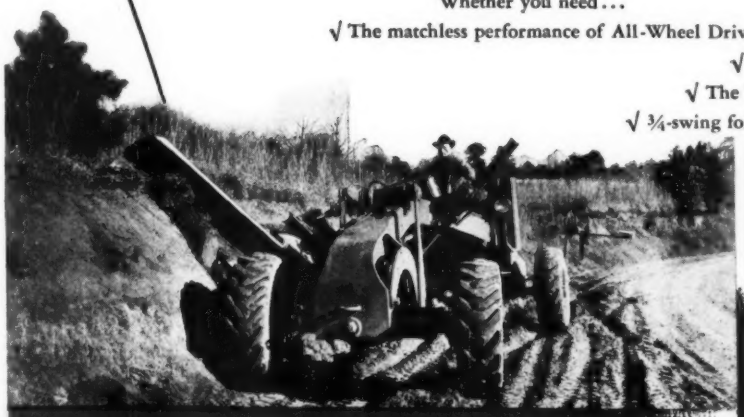
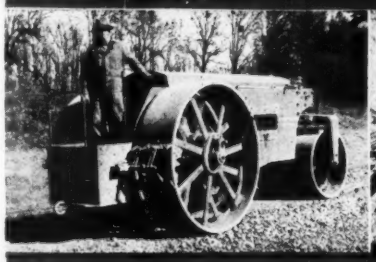
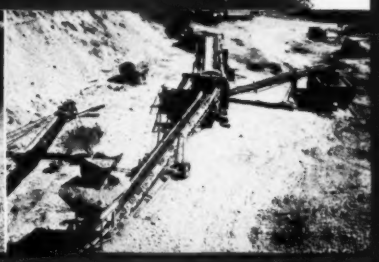
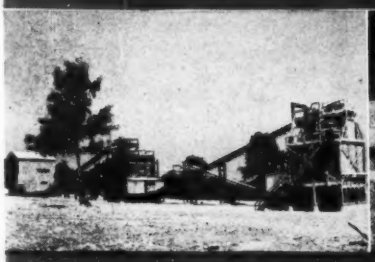
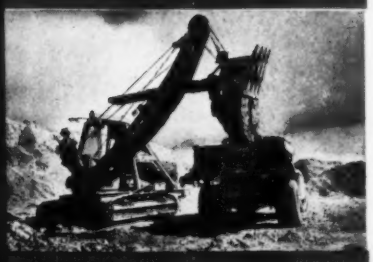










BUILDERS OF ROAD MACHINERY

Austin Western

SINCE 1859

LUMBER, by Nelson C. Brown. Published by John Wiley and Sons, New York City. 344 pages, illus. Price $4.25.

New peacetime opportunities for the lumber industry have grown out of wartime experience. This new book deals with those opportunities in a complete discussion of the industry from the actual manufacturing processes to the distribution of the product. It discusses equipment, sawing methods, power requirements, the utilization of by-products, seasoning and kiln drying, and wholesale and retail distribution. One chapter is devoted to the adaptation of the various subjects to the small sawmill. The book is designed to serve both as a textbook for forestry students and as a source of reference for persons in the lumber industry.

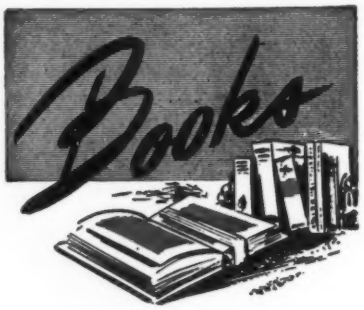
JACK MINER AND THE BIRDS, by Jack Miner. Published by The Reilly and Lee Company, Chicago, Illinois. 302 pages, illus. Price $3.50.

This is a new enlarged "memorial edition" of a book first published in Canada in 1923, and now known throughout the world. The story of the late Jack Miner and his work is one which should be on the "must list" of all young conservationists. It is a source of continuing inspiration to the many workers in the field of natural resource development.

LEGENDS OF PAUL BUNYAN, by Harold W. Felton. Published by Alfred A. Knopf, New York City. 418 pages. Price $5.

In the early days of the republic a young and lusty nation forged a breed of men that was typically American in that they caught the spirit and enthusiasm of an unconquered land's vast horizons, turbulent rivers and challenging frontiers. Their theme was work and they brought an enthusiasm to it that is almost unbelievable to Americans today. Excess might be said to have been a predominant characteristic of these men. They worked to excess, ate to excess and delighted in gigantic stories that mirrored their admiration for physical prowess.

Of the early builders of America, no specific group was more untamed than the loggers. Men of great endurance, gusto and a brand of humor all their own, it was inevitable that they should develop a myth comparable in size and stature to Paul Bunyan, a modern Seigfried with a sense of humor. Bunyan grew up in shanties around the hot stoves of winter, in the smell of tobacco smoke and the roar of laughter. If present day



people have difficulty comprehending how such gigantic stories could have been fashioned by somewhat unschooled men, they should remember that these story tellers were themselves gigantic men who had performed their share of sizable exploits.

Author Felton has compiled his legends of Bunyan with loving care and it is pleasant to note that he has included the "Winter of the Blue Snow" and "The Black Duck Dinner." The reader can pick up this book, open it to any page at random and immediately become absorbed in Bunyanana.

THE ARBORETUMS AND BOTANICAL GARDENS OF NORTH AMERICA, by Donald Wyman. Published by The Chronica Botanica Company, Waltham, Massachusetts; Stechert - Hafner, Inc., New York City. Chronica Botanica, Volume 10, Number 5/6, pages 395-498. Illus. Price $1.50.

Prepared under the auspices of the American Association of Botanical Gardens and Arboretums, this detailed report will be useful and stimulating to plant scientists and plant lovers all over the world. Alphabetical and geographical listing of arboretums and botanical gardens give information as to acreage, functions, special features, species and varieties of plants, ownership, administration and similar data. Of particular interest are the numerous illustrations, many of them after rare, old prints, notes on how to establish an arboretum or botanical garden and lists of small collections of special plants.

BIG TREE, by Mary and Conrad Buff. Published by the Viking Press, New York City. 80 pages, illus. Price $3.00.

A delightfully written story for older children, narrating the life of a sequoia from the time it was a tiny seed through 25 centuries of struggle for survival. It is treated in a whimsical manner and fosters in the young an understanding and appreciation of the giant sequoias.

The publications listed below must be ordered direct from the addresses as given and not through the Association.

Fruit Key to Northeastern Trees, by William M. Harlow, Ph.D., Associate Professor of Wood Technology, New York State College of Forestry, Syracuse, N. Y. Covers 122 species or groups, illus. Price 50 cents.

Response of Planted Shortleaf Pine to Overhead Release, by Franklin G. Liming, Silviculturist. Technical Paper No. 105. Central States Forest Experiment Station, Old Federal Building, Columbus 1, Ohio.

How Research Creates New Markets for Hardwoods, by Omar Hilton, Chairman, Committee on Hardwood Research Administration. Timber Engineering Company, 1319 18th Street, N. W., Washington 6, D. C.

Tree-Ring Hydrology of the Colorado River Basin, by Edmund Schulman. Laboratory of Tree-Ring Research Bulletin No. 2. University of Arizona, Tucson, Arizona. Price 60 cents.

Forest Trees and Forest Facts of Tennessee. Prepared by The Educational Service, Dept. of Conservation, Nashville, Tennessee.

Physical Land Conditions in Anderson County, South Carolina, by the Soil Conservation Service, supt. of Docs., U. S. Gov. Printing Office, Washington, D. C. Price 20 cents.

Basic Data on Forest Area and Timber Volumes from the Southern Forest Survey, 1932-36, by Forest Economics Staff. Southern Forest Experiment Station, New Orleans.

Timber is a Crop, published by the Weyerhaeuser Timber Company, Tacoma 1, Washington.

Minnesota's Forest Wealth, published by Forest Industries Information Committee of Minnesota, St. Paul.

Some Properties and Applications of D. D. T., published by Ministry of Supply, British Information Services, 30 Rockefeller Plaza, New York City 20. Price 15 cents.

Annual Report of the Smithsonian Institution, 1945, by the Board of Regents, Supt. of Docs., U. S. Gov. Printing Office. Price $1.75.

Industrial Research Laboratories of the United States, compiled by Callie Hull. Bull. of National Research Council, Nat'l Academy of Sciences, Wash., D. C. $5.00.

Farm Forestry in California, 1940-1945, by Soil Cons. Serv. Pub. by Div. of Forestry, Calif. Dept. of Natural Resources.

Plywood

(*From page 29*)

and durable containers. Specifications and packing methods developed during the war will be of great value to shippers and the shipping industry through savings effected by reduction in weight, insurance costs, and damage claims.

A recent and very significant development is the use of plywood in the manufacture of barrels. The domestic shortage of white oak for whisky barrels has caused concern among cooperage manufacturers, distillers, and other consumers. At least two plywood manufacturers have undertaken the production of laminated or plywood barrels, which are claimed to achieve maximum economy of material. A uniform number of staves and one-piece plywood ends are characteristic features of these containers. It is reported that the barrels have successfully withstood severe tests.

Ship and boat building, from battleships and aircraft carriers, to yachts, motor launches, skiffs, and canoes, offer a large outlet for plywood. Specially constructed plywood of Douglasfir and other woods is being used experimentally for decking on large vessels as a substitute for teak. However, it is in the field of small pleasure and utility craft that the general public will note the increasing use of plywood. Plywood has long been used in many types of craft, but chiefly in the super-structure and interior. The introduction of synthetic resin adhesives, however, has extended the use of plywood to the hull as well. The development of molding techniques has made possible the shaping of one-piece seamless hulls for small boats. Plastic surface coating provides a smooth, stream-flow exterior.

Reminiscent of ancient times, when cane and hollowed timbers were used for water conduits, plywood tubing is used in a number of industrial processes requiring a corrosion-resistant conduit for liquids. One concern is reported to have perfected a machine for the production of seamless plywood tubing of any desired length. Bonded with phenolic or urea resin, the tubes are leakproof. Radio antenna masts, structural columns, instrument cases, shipping containers, ski poles and oar shafts, tent poles, and other products have been made of plywood tubes.

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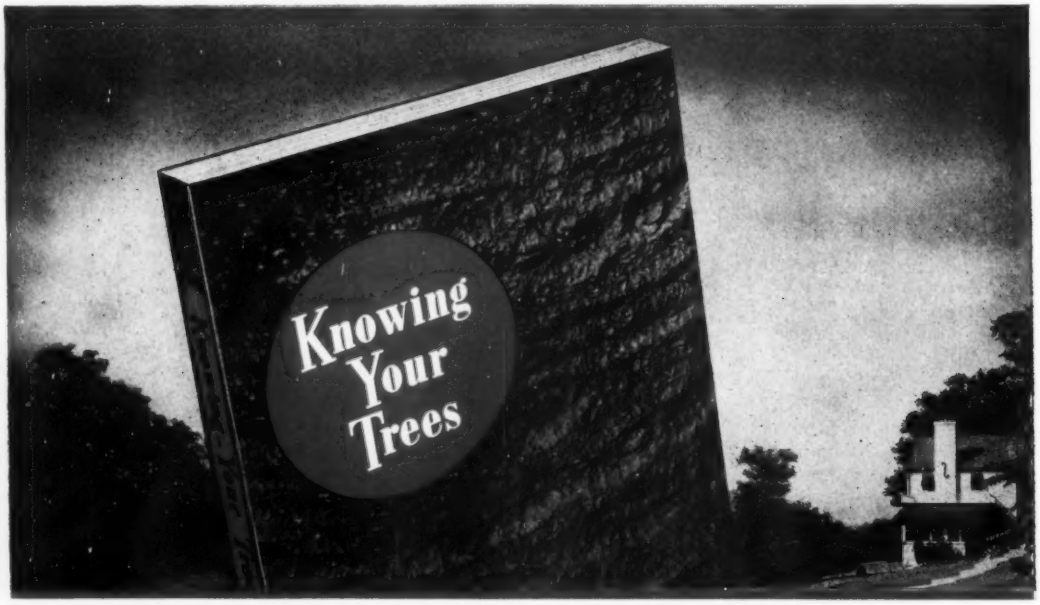

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densed by pressure to form a hard, abrasion-resistant board or block may be used for innumerable industrial items, including pulleys, bearings, and other shaped products. A panel consisting of honeycomb material faced with plywood has been produced which, because of its unusual lightness and strength, can be used in construction and for many industrial purposes.

Log supply is a problem which the industry must consider from a long-range point of view. Few softwood plywood mills own timber in adequate quantity to supply their own requirements. Most of them buy all or the greater part of their logs from logging concerns or sawmills. Hardwood plywood mills, to a large extent, are in the same position. A deterioration in log supply has become apparent in recent years. Select logs are becoming more difficult to obtain and competition among the various log consuming industries has become more acute. The more accessible forests have been depleted in some areas, with the result that logs must be hauled greater distances, at greater costs. Decline in the quality of logs available is reflected in the efficiency and cost of plywood manufacture. This disadvantage may be overcome, in some degree, by constant improvement of operating methods and equipment.

Despite extensive demand for plywood, the industry may be faced with more intensive competition from other materials. The war placed considerable emphasis on the development of new materials and the application of conventional materials to new uses. Metal, fiberboard, glass, and plastics are employed in construction, packaging, and the manufacture of furniture and many other articles in which plywood is now, or might be, used. Since price is naturally an important consideration, any increase in the cost of plywood would weaken its competitive position.

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GARDEN GUIDE

Here is a list of some of the things to be found in the new 1948 Short Guide of Kelsey Nursery Service. Copy free on request (except 25c west of Iowa). Will be ready in late February—but write NOW!

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70 Choice Varieties—mostly in small inexpensive sizes. Both evergreen and deciduous.

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BLUEBERRIES

10 New Giant Blueberries—strong 4 year-old (bearing age) now 1-1 /2 feet high, assorted named varieties, our selection, but all good, $16.00.

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Kelsey Berrybush Yew—dark green evergreen rather dwarf, bushy. Covered with brilliant red berries in autumn. 18 inch B.&B. plant for $6.50.

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How to Heat with Wood

(*From page* 21)

woods are most apt to be objectionable from this standpoint.

The resins or oils of hardwoods such as certain ashes or birches are very easily volatilized and ignited, and a wood of this kind may burn well even in the rain. The resins of most softwoods likewise burn well, so that spruce or hemlock limbs or pine butts are quite appropriate for a quick, sparkling fire with a bright flame. It has been brought out, however, that softwoods are generally of light weight and thus won't give *quantity* of heat in comparison to most hardwoods.

Turning again to the tables, it is interesting to compare ability of the same woods to "kindle," that is, to ignite and hold a flame. Without going into details of the test (based upon timing flame with a stop-watch after measured exposure to a constant gas flame), let's score the various woods from one to three—three being the most easily and one the least easily kindled:

Wood	*Score*
Birch, river	3
Elm	2
Locust, black	2
Poplar, cottonwood	2
Ash	2
Maple, silver	2
Boxelder	2
Oak, pin	1
Mulberry	1
Apple	1
Softwoods	2-3

The final phase of the burning of wood, after both moisture and gases have been expelled, is the glowing of coals or formation of embers. In this phase no heat is diverted to effect evaporation or volatilization, and maximum quantities of heat are produced by the burning of the fixed carbon of wood substance. Woods producing long-lasting coals are especially efficient as firewood. Heavier woods (hardwoods) are generally best for this purpose. Now let's see from test charts how the selected samples measured in comparison of coal duration with flame duration (wood samples were burned in an electric oven, timed with a stop-watch). In the figures given, the higher the ratio the higher will be the length of time the coals endured compared to the length of time the flame endured:

Wood	*Ratio*
Mulberry	20.9
Apple	15.8
Birch, river	15.4
Oak, pin	15.3
Locust, black	14.4
Elm	13.8
Ash	13.2
Boxelder	11.5
Maple, silver	11.0
Poplar, cottonwood	10.9
Softwoods—not tested	

On the basis of tests reflected in the various tables mentioned, a final score was given each wood. Points were allotted for degree of superiority in each test given, and by adding these points a total numerical score was developed for each wood tested. How did the woods fare in the final scoring? The highest score of all was twenty-one, for osage-orange, and the lowest was two, for cottonwood poplar. The woods dealt with in this article rated as follows (higher number indicates "all-around" superiority as a firewood over lower numbers):

Wood	*Score*
Locust, black	20
Mulberry	18
Apple	17
Ash	17
Oak, pin	15
Elm	14
Birch, river	10
Maple, silver	9
Boxelder	5
Poplar, cottonwood	2
Softwoods—not comparatively tested, but probably about	7-14

Wood, well burned, is a relatively efficient source of heat. One cord of good dry hardwood (weighing almost two tons) will produce more heat than a ton of coal. Moreover, no objectionable smoke will result from a wood fire properly set, and much less objectionable ash will remain after burning than is the case with coal. Wood is a clean fuel, generally available, and relatively simple to gather and handle. However, as in any endeavor, certain procedures in producing firelogs develop a superior product. These involve cutting, splitting and piling or storing of wood.

Having selected a wood for its fuel capacity, and having felled and sectioned the tree by whatever local means are best available, the process of "putting up" a wood pile becomes

of prime concern. As has been pointed out, a crucial factor in the burning of wood is its dryness. Relatively dry wood of any species of tree will prove usable as a fuel, but green or water-soaked wood is less satisfactory — or even valueless. Therefore, proper handling to facilitate drying and prevent water soaking is of great importance.

Generally speaking, logs four to eight inches in diameter should be halved—split at least once through the center. Splitting is commonly accomplished with ax, wedges and a tapered sledge. Logs greater than eight inches in diameter are probably best slabbed or quartered. Slabbing consists of splitting or sawing off sections of the log until only a small core remains. It is frequently the only method possible with logs too large to be split through the center. However, slabbing is less preferable than quartering, since with a slabbed log the center section becomes exposed to the weather.

In a quartered log there remains a water-proof roof of bark upon each quarter section. Quartered sections carefully piled with the bark side up will effectively shed much of the rain and snow that falls upon them. Halved logs will shed water at least equally well. Many woods, such as ash, cherry, birch, black locust and silver maple split quite easily. Others such as elm, unclear beech, old apple and hard maple, poplar, certain oaks and softwoods are more difficult to split.

Unsplit logs shed water most reliably of all. However, the watertight bark also prevents internal moisture of the log from escaping. Thus drying is slow in unsplit logs, taking place to a large extent only through the cut ends. In small logs under four inches in diameter, this drying is rapid enough to season the wood, but in large logs, especially heavy, non-resinous woods, drying may take an indefinite time. Indeed, a large, unsplit oak log may rot before it drys completely, as will white or paper birch if left unsplit or piled on damp earth.

Precaution should be taken in piling wood. The piles should be laid on a foundation of two small logs or "runners." These support the pile above the dampness of the soil and provide space for run-off of precipitation percolating through the pile.

Success with any wood fire lies in the quality and handling of the wood. Generally speaking, the best fire will be provided by a heavy wood, carefully piled and seasoned to a reasonable dryness. Most firewood should be split at least once, and should be stacked upon runners, bark up, to protect the drying wood from further soaking. Following the objective criteria given for selection of wood, and a few simple procedures for handling it, any fireplace enthusiast should be insured of a blazing hearth these long winter evenings to come.

Timber Cinderella

(*From page* 25)

and Clark, the Kootenai, the Deer Lodge and other national forests. It is anticipated that 1948's harvest will far exceed the three quarters of a million poles sold to cutters in Pacific Northwest of the Forest Service alone during 1946.

Foresters and lumbermen view the lodgepole "discovery" as one more step in the continuing fight for increased utilization of forest growth.

"Such progressive developments as this are welcomed by every lumberman," declares H. V. Simpson, executive vice-president of the West Coast Lumbermen's Association. "Today much of the growth of the forests is used in conventional plants, sawmills, plywood plants, pulp mills and allied processing plants. A healthy, woodhungry newcomer to this region is the chemical industry, which will make alcohol and a wide variety of chemicals from wood waste. Even Douglasfir bark, long a nuisance to sawmills and plywood plants, is becoming a desirable raw product for the glue industry as a binder and as a cork material in such items as gaskets. The ultimate objective is to put to commercial use every ounce of nature's bounty in the forest regions of this land."

So the lodgepole pine, tall, slim, prolific invader of the wilderness areas, is winning the favor of the world as belatedly, but as surely, as did Cinderella.

It has helped mother the earth from Alaska to Colorado and from California to the Black Hills. Scorned and deprecated in the past, it is now elected to share the place held by cedar and southern pine among commercial trees of the timber world.

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For some purposes trees can be harvested after 30 and 40 years, for pulp, poles and piling and other similar uses.

Most important thing to remember is that trees are our only renewable natural resource. Unlike minerals and oils, when once gone, trees will grow again, when properly protected.

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May the New Year bring Health, Happiness, and Prosperity.

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Managing Your Woodlands

(*From page* 32)

inventory of sawtimber capital is 64,000 board feet of ponderosa pine, 154,000 feet of Douglasfir, 27,000 feet of Engelmann spruce and 20,000 feet of larch. Among the smaller sizes he has about 1,000 poles suitable for harvest, 150 cords of dead standing fuelwood and several thousand young conifers for next year's Christmas tree market.

John Horn is not a timberman. He is a farmer. But he is a farmer who has studied the resources of his 520 acres and has sought technical advice on the proper method of managing them for continuous crops. As is pointed out in the report conducted by The American Forestry Association's Forest Resource Appraisal, there is a correlation between farming and woodland management: "successful farmers usually own thrifty woods, while those who frequently need money keep their forests impoverished." John Horn has shown how woodlands can contribute their part to a successful farm.

Forest Resources of Minnesota

(*From page* 28)

their teaching functions. It is true, of course, that the large industrial owners have a similar responsibility, and already there are hopeful signs that they are putting their own holdings in order. Five concerns which together own 333 thousand acres employ foresters and are maturing plans for permanent growing of trees. Two are paper companies, one is a mining concern, one is a timber manufacturer and the fifth has power and paper interests.

Cutting practices upon federal and state holdings, and on Indian lands, are regarded as adequate to maintain forests in growing condition. In the past, assistance to small forest owners has been limited. During 1946, however, industrial groups contributed to the Minnesota Division of Forestry the sum of $8,000 to be used in helping such owners manage and harvest their woods. Two technical foresters were put to work, with excellent results. There had been one farm forester located in the southeastern part of the state for several years, working under the direction of the extension forester. Obviously, such limited operations must be greatly expanded if the rehabilitation of Minnesota woodlands is to be accomplished.

Forest plantations in the state total about 200 thousand acres, half of them put out by industrial concerns and half by farmers and other small owners. At least five million acres need planting today. Nurseries are at hand to produce the needed stock.

Taxation of timber lands has long been recognized as a deterrent to the practice of forestry. There is a law which establishes minimum cutting regulations for operations on private lands, and an auxiliary forest law designed to encourage the growing of forest trees. The annual tax rate on lands listed under this law is five cents an acre plus three cents for fire protection. In addition to the annual tax, the timber is subject to a yield tax of 10 percent when cut. Merchantable timber on the land at the time it is put on the list is subject to yearly tax as real estate. As is the case in many states where remedies have been tried, there has been little response. However, it is said that cutover lands in the northern part of Minnesota are too poorly stocked and too low in productivity to yield even the taxes and carrying charges.

One view widely held is that northern Minnesota should be placed in strong ownership and restored to woodland, on a long-term growing basis. Much of the cleared land should have remained under trees. Game and recreation offer added earnings from wise management of such lands. Growth is slow and present stocking is with inferior species, but in time these can be improved.

The southern part of the state is a farming community, where the woodlands have use both for agriculture and forestry. It would be well then to concentrate state aid and research upon improving the forest management practised by thousands of farmers and other small owners. The livestock industry plays an important part in the state economy. Farmwoods are mostly hardwoods, which are used as pasturage, and overgrazed.

(*This article is based on the findings of the Forest Resource Appraisal of The American Forestry Association.*)

Death of the Kenai

(*From page* 13)

For the next few months there is safety while winter clamps down on muskeg and timberland. But the prospects of next summer's expected influx of visitors and settlers are disquieting. Postwar years have proved to be years of irresponsibility. More rather than less control is called for.

More rather than less money is needed to protect a nation's national heritage. Alaskans look to the block of western senators and congressmen, and all other forest-conscious lawmakers to protect the wealth of the "last frontier." Money spent on this will pay large dividends.

One official, who cannot be quoted because he is on the government payroll and needs his job, made the proper proposal after revisiting the moose preserve of the Kenai, or what used to be a fabulous refuge.

"Let Congress send a delegation to look it over. They come for everything else—on spectacular vacations at government expense. Let's invite everyone who voted to cut out the fire control funds. But instead of a fishing trip, let's take them out where it looks the worse. Then let's show them something that looks the way the Kenai did before the fire—that is, if we can find it in all Alaska. Then we might expect some action—and maybe some funds."

And Now, Paper Houses

(*From page* 23)

of radiant heating is coming increasingly into vogue. The room also is fitted with a baseboard type of radiant heating that will receive similar study.

The room at the opposite end of the unit has a wood floor laid on sleepers over a concrete subfloor in which radiant heating pipes also are embedded. In some homes using this type of heating, owners have had trouble with cracked or buckled finish wood floors. The laboratory scientists in particular want to know just how dry wood flooring should be to give excellent service when laid over such a subfloor. Accordingly, sections of the wood flooring were laid at different stages of dryness.

Most of the panels in the walls simply butt against one another, the joints between being cushioned with insulation and sealed inside and out with cloth tape. Holding them together are long wood strips at top and bottom.

In a few cases, special splines consisting of insulation and plywood covers are set into grooves along the vertical edges of the wall panels to act as joining members. These sandwich-type splines are designed to have about the same insulating value as the panels themselves.

Neither are the roof panels fastened together. Spanning the full twelve-foot width of the unit, they're held to the walls by means of cleats glued to their undersides and set into grooves along the upper edges of the wall panels. Screws pass through the wall-panel covers into these cleats.

The reason for this seemingly flimsy construction, laboratory officials explain, is to permit each panel to act independently of its neighbor, thus enabling the engineer to determine how the different panels behave.

Sandwich panels during the past two years have been given the most rigorous kind of testing the Forest Products Laboratory engineers, chemists, and physicists have been able to rig up. Their strength has been rather thoroughly explored and their design reduced to engineering formulas. Likewise, their insulating value has been compared with that of conventionally built walls and roofs, and other basic structural requirements established. The susceptibility of paper cores to decay fungi has been investigated. Resin treatment helps discourage such devourers of woody fibers from dining on these sandwiches.

But these tests, favorable though they have been, aren't sufficient, in the thinking of the laboratory technicians, to justify a final verdict. A perfect, indestructible building panel isn't being sought, but reasonable service life is essential for houses built of such panels. The house never yet was built that was impervious to all effects of weathering and age. If sandwich panels will stand up to Wisconsin's rigorous climate for a reasonable time without developing serious maintenance and repair bills, they will be considered satisfactory.

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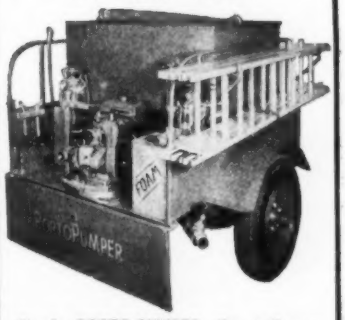

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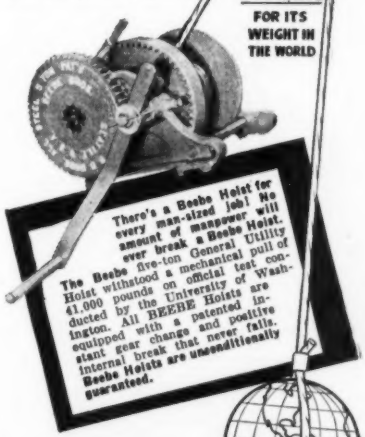

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Quetico Superior

(*From page* 20)

Chief objector of record to the twelve cents an acre payment is the U. S. Forest Service. Representatives of the Service point out that nowhere in the national forest system is such preferential treatment given to counties. All others, including those in the Superior area, receive twenty-five percent of the gross receipts of Forest Service income from the areas within the counties.

Proponents of the bill point out that nowhere else in the national forest system is there a situation comparable to that in the Superior, that the establishment of roadless areas and additional no-cutting zones around the shores of lakes and streams would reduce the potential income to the Forest Service and in turn reduce the amount paid to counties. They emphasize also that the high-priced real estate which would be included in the roadless areas is now giving a high tax return to the counties.

The Forest Service counters with the statement that the payments to the counties are likely to increase, since the forest originally acquired when in a cut-over condition is now rapidly reaching timber-harvesting age; and further, that the counties will realize more in taxes from resort developments around the fringe of the roadless area because as these develop they will be served by forest roads. By proper zoning of the lands within and outside the roadless areas the income from resort taxes will be recovered as new facilities are developed.

In May, 1947, the Tri-County Committee, representing Cook, Lake and St. Louis counties, agreed to forego twenty-five percent of local Forest Service receipts if the twelve cent provision was retained in the bill. It is understood that the Forest Service would have no objection to a law providing for the three counties to receive an annual payment in lieu of taxes of three-quarters of one percent of the fair appraised value of the national forest land.

And there the story rests as the 80th Congress starts its second session. The counties and the Forest Service have moved toward a compromise, the area of disagreement proving narrower than the area of agreement. This is a salutary sign.

The whole question of payments in lieu of taxes is one badly in need of study and solution. If an over-all payment bill such as that introduced by Senator Cordon of Oregon, were to be passed there would be no need for the insistence on a special payment of twelve cents an acre. The Cordon bill provides for payment of two percent of the value of the land, and would probably yield to the counties as much or more than the amount proposed in the Blatnik bill. But it is almost too much to hope that both the Cordon bill and a revised Blatnik bill will pass the 80th Congress, especially since the Cordon bill would have to be enacted first to make certain that a revision of the Blatnik proposals would be in complete harmony.

So, while the arguments go on, the development of the roadless area continues. It may still be possible at some later date to pass a bill without the objectionable feature of special payment to the counties. But by that time the cost of acquisition of the key private lands will probably jump well beyond the modest $500,000 now believed adequate to safeguard the more important areas.

Failure of the program on the United States side may weaken the effect of efforts in Canada. At the present time, the Canadian government and the Province of Ontario are withholding permission for developments in Quetico Provincial Park. They cannot hold off long in the face of increasing developments on the United States side. They have agreed, however, temporarily to hold the line. But the resort interests in Canada are champing at the bit, especially as they see developments across the border running apace.

When the program is accomplished, the area probably will be designated as the Quetico-Superior International Peace Memorial Forest, in honor of the men of both countries who fought side by side in two world wars. This proposal, so far as World War I veterans are concerned, has had the backing of both the American Legion and the Canadian Legion since 1929.

The fourth phase of the Quetico-Superior problem is not touched upon by the Blatnik bill. It is also one which should have immediate attention. A committee of the National Research Council's Division of Biology and Agriculture, at the request of Lyle F. Watts, chief forester of the U. S. Forest Service, has made a special study of the problem and the urgency of its solution on this and other wilderness and park areas has been pointed out.

The committee recognized the desirability of locating landing fields and similar facilities at the borders of such areas, but recommended that landing of aircraft be prohibited in any areas which have as an important objective the preservation of wilderness atmosphere, except in emergency or for purely administrative purposes.

In primitive lake country, it is equally important to exclude the

motorboat, which the committee feels is as incompatible with wilderness preservation as is the airplane. The committee also urged the cooperation of the states and federal government in supplementing each other in regulations and zoning laws where private property rights are involved.

The President's Quetico-Superior Committee recommends the establishment of a lawyers' and laymen's committee, including legal officers of the government agencies concerned and representatives of conservation organizations, to draw up proposals for zoning of aircraft use.

The immediate and urgent issue, however, is the halting of further development in the Superior side of Quetico-Superior. While proponents of the Blatnik bill and those upholding the Forest Service attitude toward the payments to the counties are losing time by failing to agree fully on one section of the bill, the area rapidly is becoming less and less primitive. They must remember there is no compromise with nature, nor with human nature—especially when a "good thing" can be made of the situation by those primarily interested in immediate monetary returns.

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AFA ACTIVITIES

Joseph F. Kaylor, assistant executive director of The American Forestry Association, told the Forest Industries Council, meeting in Chicago on November 19, that if the Association's thirty-point program for American Forestry is to fully achieve its objectives, support of the forest industries is needed.

"Your support is needed to help put the program across," Mr. Kaylor said, in addressing the council. "The public is looking to you for such support."

Cooperation, he declared, is one of the great conservation needs in this country today. "The management of soil, water and forests represents a complex picture in need of coordination."

To this end, said Mr. Kaylor, "The American Forestry Association offers to aid in developing public support so that the social and industrial welfare of the nation will be continued on a high level. Its work in this field, during the past seventy-two years, gives testimony to the fact that the Association stands for the promotion of citizen education designed to develop leadership and action to maintain forest products consumption at a high degree in American life. Much can be accomplished by disseminating information to timber users and growers of forest products."

To assist in coordinating conservation activities, Mr. Kaylor declared, the Program Committee of the Association recently sponsored a survey of educational projects on a state-by-state basis. "Results of this study reveal that there is great interest in conservation and that many agencies are engaged in some phase of supplying useful information. But one fact stood out—there is duplication of effort and a crying need for coordination to save time, money and materials.

"The Association is expanding its Program for American Forestry through the appointment of a Forest Council—a council which will cooperate with the Forest Industries Council. And since it will be composed of leaders in industry, banking, transportation, agriculture, commerce, government and other fields of American life, we firmly believe it will bring about a much broader interpretation and participation of the action required."

* * *

When, on Christmas Eve, President Truman lighted the living evergreen at Washington that long ago became the nation's official Christmas Tree, it marked the twenty-fifth anniversary of that impressive ceremony. Every year since Calvin Coolidge began the custom in 1923, thousands of people have gathered in the soft twilight of Christmas Eve to sing carols and hear their President give his Christmas message to the nation.

The first national Christmas Tree was a fir, cut from the forests of Vermont. A year later, The American Forestry Association presented to the President and the people their first *living* National Christmas Tree, a Norway spruce. From that year the branches of a living tree in the Nation's Capital have gleamed with myriad jewels of light each Christmas Eve. Since the inception of the ceremony, the Association has cooperated with other organziations to perpetuate it. Its executive director is a member of the National Community Christmas Tree executive committee.

AUTHORS

CHAPIN COLLINS (*Selling Forestry to the Farmer*) is director of American Forest Products Industries, Inc., with headquarters in Washington, D. C. J. A. DONERY (*Forest Resources of Minnesota*), formerly on the staff of the Forest Resource Appraisal of The American Forestry Association, now lives in California. ELIZABETH FORBES (*Rebirth of Aspen*), writer and winter sports enthusiast, lives in the town she writes about—Aspen, Colorado. ROBERT B. MAHAFFAY (*Timber Cinderella*) is a writer on the staff of the West Coast Lumbermen's Association, Portland, Oregon. A. D. MCKELLAR (*Twenty Years of Plywood*) is a forest economist attached to the Lumber and Allied Products Division, Office of Domestic Commerce, U. S. Department of Commerce. ROBERT W. SCHERY (*How to Heat with Wood*) is research associate with the Missouri Botanical University, St. Louis. DENNISON H. MOREY is supervisor of the university's greenhouse.

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The Purpose

The American Forestry Association is a national organization—educational in character—for the advancement of the intelligent management and use of the country's forests and related resources of soil, water, wildlife and outdoor recreation. Its purpose is (1) to bring about adequate protection and perpetuation of these resources by creating an enlightened public appreciation of the need of conserving them through wise use for the present and future welfare and enjoyment of all the people; (2) to make available to Americans in all walks of life a wider knowledge and appreciation of their forest resources and the part they can play in the social and industrial life of our nation.

The History MORE THAN half a century ago American men and women of vision, stirred by the rapid destruction of forests and forest life in the United States, began to raise their voices in behalf of conservation. Foreseeing the danger of allowing America's rich forests and vast natural wealth to be thoughtlessly wasted, these public-spirited individuals protested the needless destruction that was taking place. Out of their efforts came a collective force—The American Forestry Association, first organized in 1875 and made a national influence in 1882.

The Record THUS The American Forestry Association has a long record of efficient public service. The establishment of the United States Forest Service and the creation of the nationwide system of state and national forests and parks were due in no small part to the Association's efforts. Its educational work, extending over more than seventy years, has stimulated public action and built public support for protection against forest fires and floods; for prevention and control of soil erosion; for the development of conservation policies in forest management for continuous production through wise use; for the control of forest insects and diseases and the preservation of fish and wildlife.

The Support FROM AN ORGANIZATION of a few hundred members three decades ago, the Association has attained a substantial membership of many thousand men and women, living in every state of the Union and in foreign countries throughout the world. The funds of the Association are administered by a Board of Directors composed of individuals of national standing—men and women who give their services free, who have a practical understanding of the nation's present-day conservation needs, and are equipped through experience, ability, enthusiasm and training to advance the Association's program.

The Program BECAUSE OF its independent, non-political character, the work of The American Forestry Association is vitally necessary in the field of public service. It provides an unprejudiced influence for the development of sound conservation measures. It helps coordinate public, state and federal policies. It cooperates closely with federal, state and private agencies in conservation work. At the same time it initiates, sponsors and carries on needed projects in conservation in addition to its regular broad continuous program of education.

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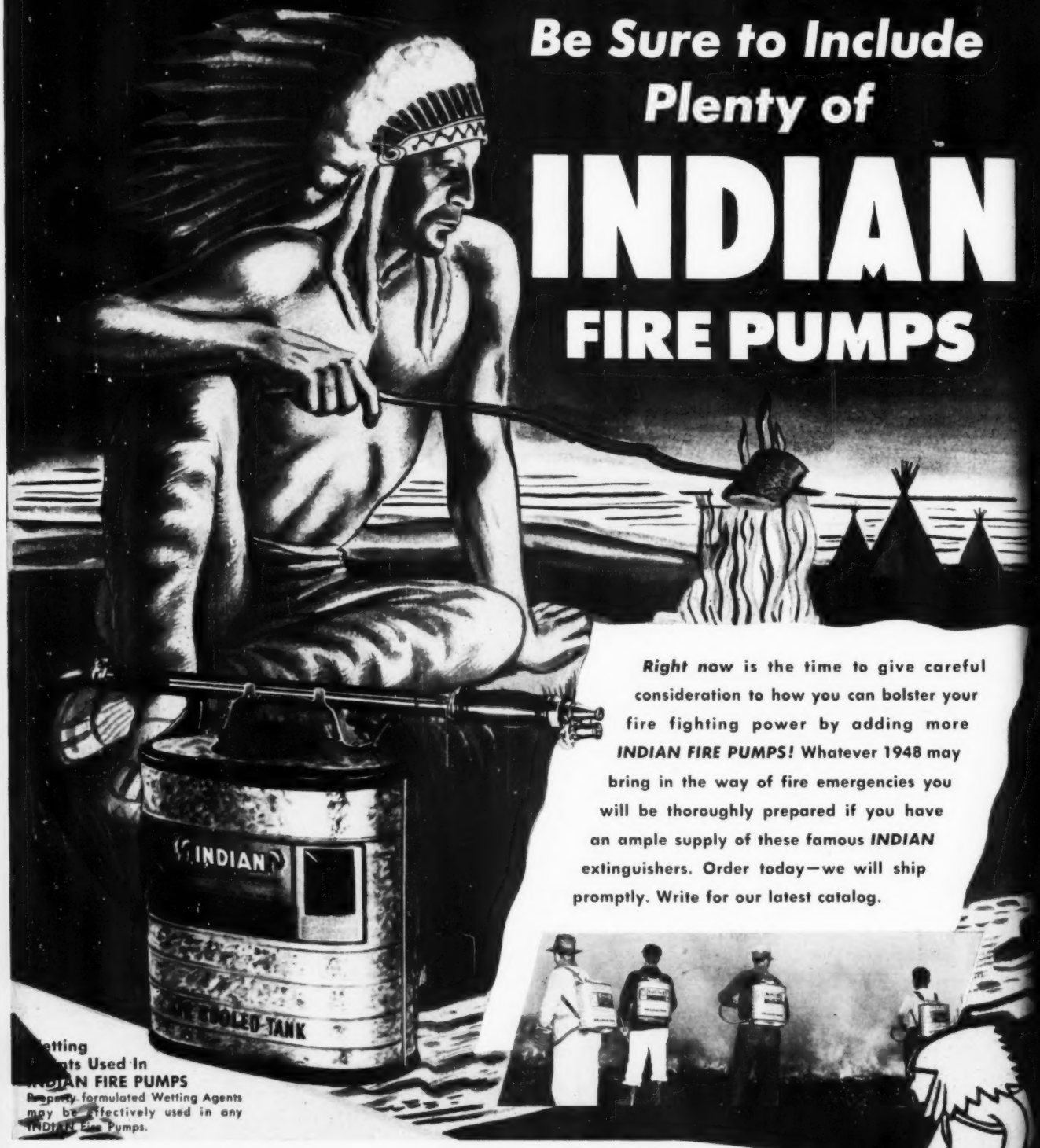

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